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# The Guide to Nature

Guidance for JUNE, 1914

Publication for May. Vol. VII, No. 1

The volume begins on Agassiz's Birthday (the 28th).



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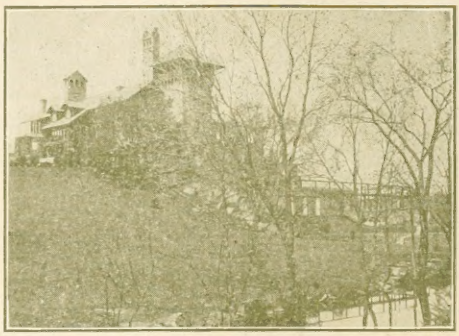
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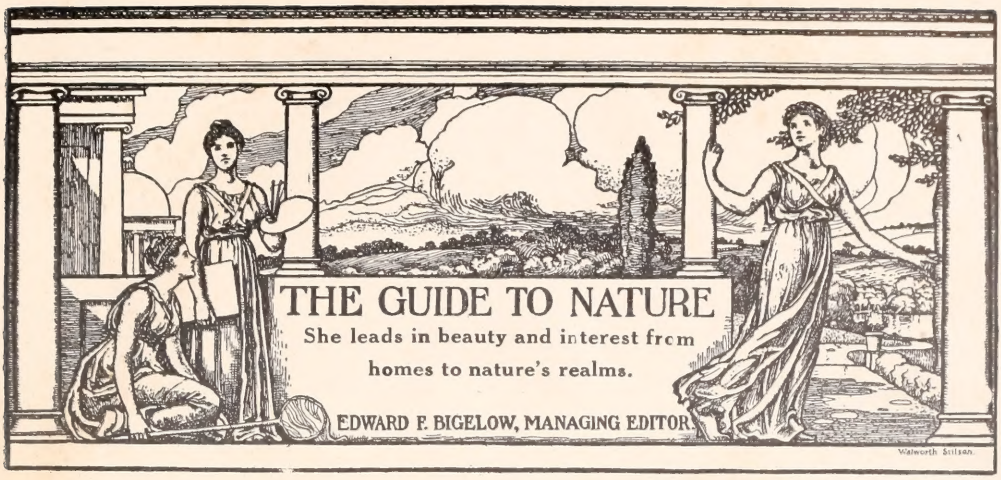
# GREENWICH NURSERIES

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LANDSCAPE GARDENERS AND NURSERYMEN

GREENWICH, CONN.

A2387




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut

Subscription, $1.00 a year Single copy, 10 cents

Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1879

Volume VII Guidance for **JUNE.** Publication for May. Number 1

# The Figure Carving and Feather Work of Colombia.

**By Paul Griswold Howes, Stamford, Connecticut. Photographs by the Author.**

For years I had read of South American countries, of their snow-capped mountains, their jungles and cities; and above all of their contagious fascination. I had read something of them all, and each seemed equally rich in possibilities; yet, strange to say, there was but one of these far away countries that I always longed to see. It was Colombia, the most northern of the larger Latin republics. Just why, I do not know, but perhaps Bogota, its capital, mysterious and hidden among the Andean hills had something to do with it.

Then at last sweet fortune came my way. I joined a zoological expedition to explore Colombia and we were to pass through Bogota! First there were ten days upon a fruit liner, spent in cruising the glorious turquoise southern sea, where flying fishes play and brilliant yellow seaweed tells one of the sun-warmed water.

At Puerto, Colombia, a baking little coast town, the big steamer drops you.



EVEN THESE TINY CARVINGS ARE PERFECT IN DETAIL.

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Then, if you are lucky, you board a funny little train of narrow guage cars, pulled by an old-fashioned engine that protests with violent shrieks, each time the steam is sent into her ancient cylinders. As you rattle along through the sun-baked land where lizards thrive and bleaching cattle skeletons tell of many a vulturine feast, it suddenly dawns upon you that this is South America, and you look from the car window with new interest as tiny mud huts with thatched roofs and their quota of half clothed humanity flash past.



WOOD CARVINGS OF COLOMBIAN PEASANTS.
Note the water bottle, chicken, baskets and other details which are life size in the illustration.

Two or three hours later, if you are fortunate, the train pulls into Barranquilla, a clean city of some twenty thousand inhabitants. Here is where the Magdalena river boats dock, huge old wood burning stern wheelers. The day after arriving in Barranquilla I was on a river steamer named the "Margarita" with a captain who had seen service at one time on an American coasting steamer!

The river was very low, it being January and the height of the hot and dry season, and altogether eleven days were required in making the four hundred odd mile trip to La Dorada. I was rather glad that the steamer was so slow, as this river trip alone, is worth going to South America for.

Great tropical forests come down to the very banks on either side, forests of the tropic's most gorgeous trees and plants. Hundreds of beautiful birds of every imaginable color, and an occasional monkey are seen among their branches, while on the sandy banks of the river proper, one sees numerous crocodiles and once in a while a pair of Capabarras, a species of huge South American rodent. Many little native towns are also passed whose mud and thatch huts remind one of pictures of darkest Africa.

Twice a day our steamer stopped for a fresh supply of fuel, which is purchased from the native river people who own regular wood stations. During these stops the entire expedition would go off into the forest to hunt and in this way a beautiful collection of birds was secured.

The food on these river steamers is very bad, some of it being decayed or even filled with maggots when served. Cattle are carried on board and are slaughtered, sometimes only an hour before it is cooked for the passengers! For water one must drink the Magdalena, and it is far from uncommon to see the carcass of a dead cow or "mula," as a donkey is called, floating down with the current. Several disgusting vultures sitting upon the carrion and occasionally picking at it adds greatly to one's comfort when drinking the water!

At La Dorada there is another nar-

row guage railway which takes the traveler some eighteen miles to Honda, where one may be very comfortable at the Hotel American, owned by a charming English gentleman and his wife.

Honda is a fascinating little town, being typically Spanish with barred windows in all of the houses where the Señoritas may sit and gaze upon the passers-by. The streets are paved with cobble stones and the houses are of cement painted in shades of red, blue or gray, with red tile roofs. Large fine trees, with beautiful foliage are abundant in the streets and courtyards and here and there higher up on the hills, an old mission of Spanish times, gleams white against the greens of the foothills in the background.

The old market place is extremely interesting and was the scene of a bloody battle in which only knives were used, during the last revolution. It is here that fodder, food stuffs and native wares of all kinds are bought and sold. There are drawbacks to the town, however, chief among them being the presence of many lepers and



WAX FIGURE OF A COLOMBIAN PEASANT WOMAN.
It is a common sight to see this type of native with a huge cigar in her mouth.



A COLOMBIAN PEASANT IN WAX.
The features are excellent of a common type.

natives with goitre and other dangerous diseases.

At Honda one takes a mula for the last leg of the journey to Bogota, which is a three day trip over the mountains. During the ride the scenery grows ever more beautiful and during the first day, if the weather is clear, there is a glorious view of the Magdalena valley, the foothills and Tolima, Isabel and Ruiz, three great snow-capped peaks of the central Andes. One night was spent at Villeta and another at Guaduas, little mountain towns. Then came the third day and the tedious climb over the last separating ridge and I found myself,



A CORRECT REPRODUCTION OF CLOTHING AND MANNER OF CARRYING PACKS AS USED BY THE MOUNTAIN AND OTHER PEASANTS.

at last, actually descending onto the great historic plain of Bogota!

Two hours later I was on the train which runs from Facatativa, on the plain, to the capital, and it seemed but a few minutes after this, before Bogota, the great inland city, eight thousand, eight hundred feet above sea lever, spread out before me. Flat and white, with the great cathedral standing up above all the rest and backed up by cloud-reaching purple hills with their guarding monastaries, it was indeed a sight never to be forgotten.

Some time later, when I had finished my walk about the city, I said to myself: "This is indeed Mañana Land," which means, "The Land of Tomorrow." No one seemed to ever be in a hurry or to have anything to do which demanded immediate attention. Men were walking arm and arm, swinging their silver-tipped canes or standing in little groups in the main streets, gaz-

ing at the women who thronged the balconies. Horse-car drivers were shouting, "Permisso, señor," "Permit me, sir," before they could pass! Imagine a New York motorman asking you please to get off the track!

Then I expected to see hundreds of stores, up to date and filled with native wares and products. But there were few of these, save for an occasional one with a stock of imported hardware, clothing, jewelry or junk. There are plenty of smaller stores, to be sure, poor places indeed and not of the type one would naturally expect to find in a city with a population of over one hundred thousand.

I knew that there must be a certain amount of native arts and crafts, yet I could find little or nothing in the shops, and even in the market, where it seemed as though most anything might be found, there was nothing out of the ordinary. Then at last I found some exquisite little wood carvings, but not in a store; they were brought to my room by the brother of the two girls who made them!




THE UNITED STATES COAT OF ARMS IN FEATHERS.



AN EXQUISITE FEATHER SCENE BY ARROYO.
The trees in the background are composed of very finely chopped green feathers.

There were little men and women, perfect copies of the Colombian peasants, also little animals and houses showing every phase of posada life, far surpassing the carved work for which Switzerland is so famous.

He was a keen, dark-skinned stocky fellow who brought them to me, with

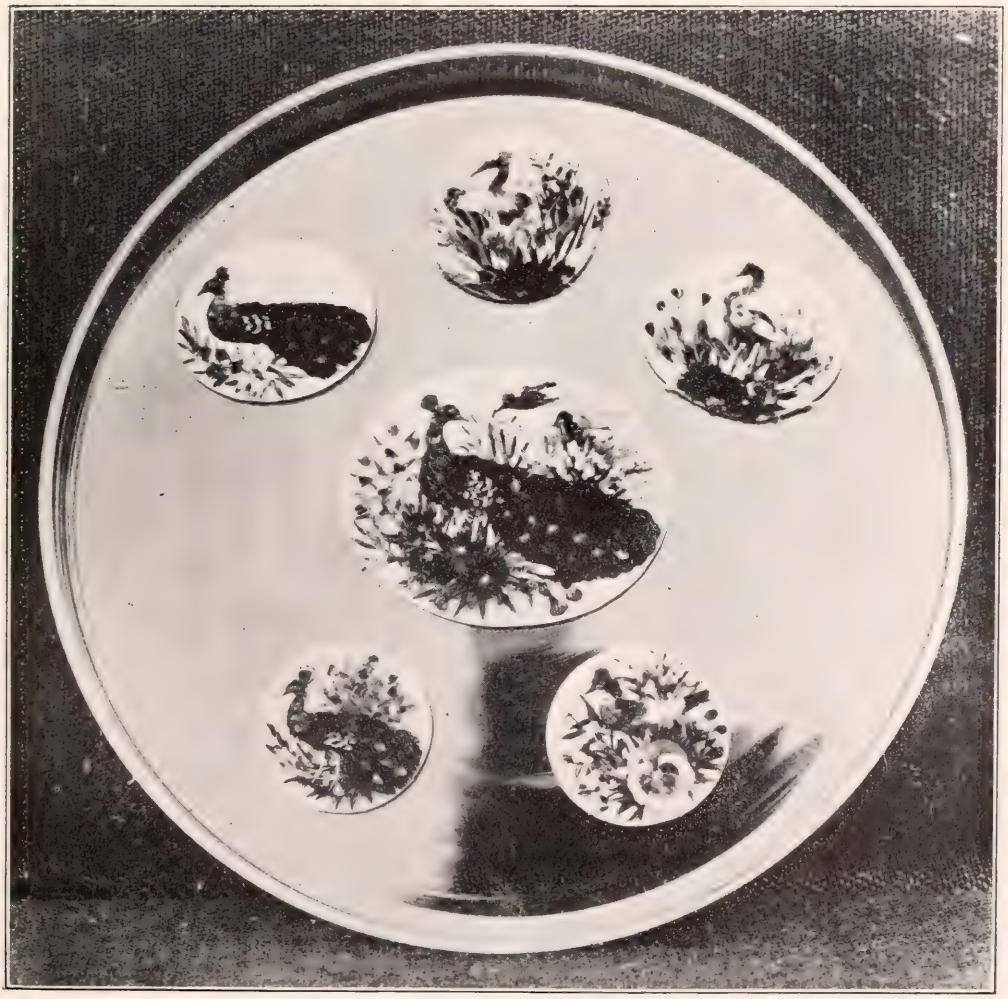
a heavy black cape thrown about his shoulders and a dark felt hat covering his oily black hair. The little men and women were two dollars each, but I finally paid forty cents for them! Later he came back to me with some wax figures, even more perfect in feature and dress than were the wooden ones. These I obtained for less than he had intended to charge me for the carvings!

About a week later I became acquainted with a little old man named Arroyo. He was about five feet tall, thin and slightly bent, with a low sad little voice. His skin was dark and his face heavily grown with a black beard, mustache, and side-boards to match. Through his big gold spectacles two squinty merry eyes looked out at you. His dress consisted of a once white shirt and collar, a long black coat and a flat comical derby hat.

I was sitting in my room one evening about six o'clock when a timid hand knocked upon the door. This was my first meeting with little Arroyo, and as he entered he handed me a card which caused me to smile at the wording and spelling, but he was my friend from that minute. It read:

"ABRAHAM ARROYO,
FEUTHER PICTURE MAKER.
THE BEST OF AMERICA."

He had brought some of his feather work with him and it was indeed a revelation. Perfect in combination of colors and beautiful in design, Arroyo is a born artist. Miniature birds and



MINIATURE GROUPS OF BIRDS AND FLOWERS.
In a bright light, these are beautifully iridescent.

flowers are his specialty and these he mounts upon Mother of Pearl. The illustrations to my article give no idea of their beauty as it is impossible to describe the coloring. Suffice to say that the feathers are taken from the most beautiful of tropical birds.

One day he invited me to visit his work shop and I went, expecting to see all kinds of instruments and appliances, but his outfit is of the simplest nature. A reading glass or two, a pair of forceps, a bottle of glue, scissors, paint and a few carpenter's tools is all that he uses. Here also he has countless bird skins of every known color from which each feather is selected, cut to the desired shape and then glued in its position in one of Arroyo's scenes or designs each of which is exquisite and perfect to the last detail.



ALL MADE OF FEATHERS.

This work is a terrific strain upon the eyes owing to the minuteness of many of the objects. Arroyo told me himself that his eyes were beginning to bother him greatly and owing to the fact that he knows no other trade, it has become necessary for his little son, who is only seven years old, to start learning the work of his father.

The United States coat of arms shown in the illustration is an interesting example of the patience of its creator. It is entirely of feathers of gorgeous tropical birds and is mounted upon a sheet of plate glass, eighteen by twenty-four inches square. The stars at the top of the plate are of greenish blue with a touch of shining coppery iridescence in their centers, which contrasts greatly with the bright vermillion banner with its lettering of deep purple. The inner parts of the wings are of lovely green feathers, taken from the jacama, while the outer parts are of soft, shaded dove feathers. The delicate barring on the eagle's tail is made from the feathers of a South American family of birds known as Trogons. As these birds are difficult to find at all times, it gives an idea of the time which must be spent in completing a single mount. The legs, arrows and branches are of shining green with bands of purple and the berries are in vermillion. The shield is perfectly colored, and each star is made from five separate points with a little touch of gold in the center which was made by powdering the feathers from a humming bird. Taken altogether, it is a very striking and brilliant piece of work.

It took Arroyo twenty-two days to finish it and although his regular price for a coat of arms is thirty dollars, he let me have it in exchange for a sixteen dollar gun!

I found one or two other feather workers in Bogota, but their work could not compare with that of the little man with the beard. They were crude in detail and the color combinations were equally bad.

Arroyo goes into the field and hunts for his own birds and in this way he is enabled to secure specimens whose feathers are of the proper colors for his work. This I presume is why he wanted my gun.

I bought many things from him, all

that I could afford, and I prize every one of them as I would a relic of prehistoric man. Whenever I look upon Arroyo's work it carries me back over the mountains to the hidden city and the little man who was my friend. He came down to the train the morning I left, at six o'clock to say good-by. His last words to me were, "I wish you a very happy journey. You have been very good to me."

I have seen the Mexican feather work and the arts and crafts in many foreign countries, but to Colombia belongs the wreath of laurel, for never have I seen anything equal to the art of Arroyo the feather worker, or the wood carvers of Bogota, my dream city of the Southland.

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**Novel Editing in Nearness to Nature.**

The pretty, bustling little town of Westfield, in the Woronoco Valley in the western part of the old Bay State, renowned for its manufacture of whips and cigars, and famous as the "pure food" town of New England, and well known for its educational institutions, now claims another distinction because it is the home of the Woronoco Valley Calumet, unique among present day publications. This little periodical is issued from a sanctum in the wilds of the historic valley—a typical Indian tepee, "Seneca Wigwam, The Press in the Forest."

The Woronoco Valley Calumet—The Peace Pipe, is a little magazine owned, edited, illustrated, printed and published by Joseph C. Duport, a well-known journalist, artist and out-of-door enthusiast of Westfield, Massachusetts. It made its appearance some three years ago, and at once met with public favor. Since that time its growth has been sure and steady. It savors of the wilderness, and links the historic past with the teeming present. It teaches the gospel of sunshine and of good cheer, and is rich in Indian traditions, philosophy and records.

The home of the Calumet is Seneca Wigwam, where the editor, far from the hurry and the pressure of the conventional business life, prepares his editorials in the wilderness, with the chirp of birds and the soothing murmur of the pines about him, sets his type in the shade of a hemlock and prints his little "Indian" magazine



"COMPOSING" AN ARTICLE DIRECT FROM THE CASE, WITHOUT MANUSCRIPT, AT THE "PRESS IN THE FOREST."



SENECA WIGWAM VIEWED FROM THE "BIG TRAIL."



ENGRAVING ON NATIVE WOOD IN MOHICAN FOREST.

with the fragrance of the forest in his nostrils. When the weather is inclement or the storms of winter howl about the wigwam, the editor, seated before his cheery fireplace, works contentedly, and the elements, savagely raging without, act as an incentive to articles on the wilderness and its mysteries.

The Calumet has blazed a trail of its own. It is the originator of the "Press in the Forest," and its headquarters stand unique. Its home—the wigwam—a structure modeled on the lines of an Indian tepee, is located on "Aquittamaug Terrace in Mohican Forest, overlooking P o c a h o n t a s Garden," about four miles from Westfield. In this sanctum, besides editorial work, artistic and exclusive bits of woodcraft and stone-craft are made, native woods are engraved and carved, printing in the original style of the Mohican press is done, and limited productions of unique totems, Indian arms and "den" ornaments are originated in artistically crude and backwoods style.

The wigwam is located on the side of Little Mountain near the state road between the towns of Westfield and Woronoco. It rears its vari-colored pyramid against the green back-

ground of the forest, and stands a sentinel as it were, to guard the traditions of the past and to remind the present generation of the days when the red man followed the "trail." Close by the trolley cars rumble, across the river speeds the express train; on the highway automobiles and other vehicles pass and repass; through the gorge the Westfield River flows peacefully, and back in the hills reign the tranquility and the mystery of the wilderness. To the right Mount Tekoa rears its imposing height, and at the eastern portals of the Berkshires the traveler pauses between the past and the present. Where else in New England can be found such a contrast—the busy present day life, and the quiet and primitive beauty of the forest?

Approaching the wigwam one discovers on the terrace the word "Calumet," printed on the green lawn in letters of white stone five feet high. A little further on letters in the same style and size state that the "pale face" has entered Mohican Forest. The wigwam stands on an abrupt prominence, and its primitive covering and fantastic decorations blend harmoniously with the green of the woods. About it bloom bright flowers in beds made and cared for by the "white chief." Nearby is an observation platform from which the visitor may gaze at the scene for miles around, while the "sachem's seat" is an interesting and enticing nook.

The walls of the sanctum are covered with skins and furs, and a cheery blaze in the stone fireplace invites us to slip into the rough hewn but serviceable chair. From the depths of a wooden chest the "white chief" produces some lunch, and, while we munch contentedly, he waves his magic wand, and, following his hand, we behold on the opposite side of the room an up-to-date, twentieth century printing plant and the editorial department of the Calumet. Then he may deliver a little sermon on out-of-door life, on communion with nature and the mysteries of woodcraft. The day is far spent when we leave the wigwam, but a feeling of rest, of refreshment and of hours well spent lingers as we "trail" back to the "big town" and its contrasting life and work.



SENECA WIGWAM, SHOWING THE PROPRIETOR IN INDIAN COSTUME.

The editor states that he is "blazing a trail of his own," which is probably true, for, where in the country, from coast to coast, has there been seen such a modernized "wigwam"—a new note in American architecture? From him we bear this message to the reader: "Brother, whoever and wherever you are, go into the fields and woods and penetrate into shady nooks; explore new country; all the time with open eyes and a receptive mind and heart. You will be made to think of the great Power behind these works. You will be educated—refreshed!"

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### Dreamers of Dreams.

[Quotations from an editorial in "The Greenwich Press" on the originator of the parcel post.]

"One summer afternoon nearly seven years ago, an old gentleman entered the office of a Greenwich newspaper, where I was then employed, and asked to see the editor. He said his name was Cowles.

"He was a rather remarkable looking old gentleman, with the face of a dreamer, and long snowy locks, and the outer evidences of refinement and education. He wore a long black cloak, though the weather was warm, and a big black slouch hat. He was mild mannered and unusually polite, almost apologetic in his air. He was accompanied by a middle-aged woman, who, I afterward learned was his daughter.

"He wanted to talk to the editor about a great idea of his, whereby the Postoffice department should carry large packages, just like the express companies, but at much lower rates. Incidentally he mentioned that he was taking a rest at a local sanitarium, after a prolonged nervous strain.

"I conveyed his message to the editor. As I told it I could see an expression half of contempt, half of pity flit over the editor's face, and there was a trace of irritation in it. As I mentioned the fact that the man was staying at a sanitarium, an understanding smile was directed at me, and I was told that the man could tell his story to me. It was clear, though he did not say so, that the editor had no time to waste in listening to 'bugs.'

* * * *

"And now I think of it, it seems to me that nearly every great reform, every big step in the progress of the race comes in a like manner. There is always the theorist, the dreamer, who thinks it all out—the man who sees a vision of the world as it might be, tomorrow. And the vision becomes so bright to him that he can see naught else, for its brightness. And he is impelled to go forth into the highways and byways and preach it. The one consuming longing of his life is to make others see it as he sees it. Eventually he is generally broken on the wheel. His frail life is burned out by the fire within, or battered to pieces on the rocks of a dull, unseeing humanity. If his truth is too great, he is imprisoned and scourged. If it is very, very great, he is forced to drink the cup of poisoned hemlock. And the greatest of all truths brought crucifixion as its reward."

* * * *

Editor Talcott has well expressed the course with many great inventors. With natural scientists who would aid in the uplift of humanity through nature the course is similar but a little varied. Take, as an example, Sir Richard A. Proctor, the famous missionary astronomer who toured this country before applauding audiences. They eulogized him for his great work, for the heroic self-sacrifice of himself and family. This country of great wealth cheerfully let him struggle against every phase of poverty and then let him be buried in the "poor" part of a cemetery. But he had his reward even in a pecuniary sense. Years after his death his bones were dug up by the great philanthropist, Geo. W. Childs, who moved them to a more conspicuous part of the cemetery and gave him a costly monument. "All things come to those who wait"—if they only wait long enough.

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This earth with its infinitude of life and beauty and mystery, and the universe in the midst of which we are placed, with its overwhelming immensities of suns and nebulae, of light and motion, are as they are, firstly, for the development of life culminating in man; secondly, as a vast schoolhouse for the higher education of the human race in preparation for the enduring spiritual life to which it is destined.—Alfred Russel Wallace in "The World of Life."

## Care and Exhibition of Animals in Zoological Gardens.

BY R. W. SHUFELDT, M. D., CORR. MEMBER OF THE ZOOLOGICAL SOCIETY OF LONDON, ETC.

[Photographs by the author made especially for this article.]

There has been very considerable interest aroused lately in regard to the care and comfort of all manner of animals kept in captivity. This has manifested itself in various ways, as the convening of important Congresses, composed of delegates and others, from many places in different parts of the country, and the attention it is constantly receiving in the press.



FIG. 1. BOX-CAGES CONTAINING COUGAR, COYOTES, OCELOT, LYNX, ETC.; AT ONE TIME TWO BEARS.

To maintain a well stocked zoölogical garden, of a size worthy of the name, is an expensive proposition for any city; so it is no wonder that we have, notwithstanding our ninety millions of people—and in common with many other populous, civilized nations—so few institutions of this class. Aside from the National Zoölogical Park at Washington; the Bronx Park of New York City; the Philadelphia "Zoo," and the Zoölogical Garden at Cincinnati, there are no others of unusual extent in the United States, or any that contains large representative collections of animals.

This is very much to be deplored; for, if properly conducted and maintained, a zoölogical park constitutes an educational center of a very far-reaching importance. Indeed, if equipped, stocked, and managed as it should be, its influence upon many of the arts and sciences is truly marvellous, while it has long been recognized as an establishment where biologists, artists, sculptors, anatomists, physicians, zoögeographers, and many others may obtain data most essential to their several professional callings and special researches.

It is safe to say that, in the matter of acreage, the National Zoölogical Park at Washington, D. C., with its five hundred acres or more of territory, is of greater extent, many times over, than all the rest of such places in this country put together. Not only is this the case, but the topography of this reservation is of exceptional beauty and diversity. It is a most fertile tract of land on the very boundary of the city, and so located that it is of easy access to everyone. Topographically speaking, it is highly rugged and rocky and most of it is rolling or markedly hilly. There is little of it which is more or less level; some parts are heavily timbered, and many isolated, magnificent trees occur at attractive points. Winding

through all this runs a broad, clear stream, of a size well above the average creek as so designated on the maps. Rivulets, with their frequent little water-falls, empty into this stream, the whole affording, with respect to both land and water, an ideal reserve for the purpose for which it has been selected.

As to climate, Washington is very fortunately situated and leaves but little to be desired as a place of location for a zoölogical garden in this part of the world. Rarely are her winters severe, and the polar bears and fur-seals seem to survive her summers, year in and year out, without any special hardship.

Under these favorable conditions, and in face of the enormous wealth of this country—both public and private—there is absolutely no excuse as to why our National Zoölogical Park should not meet every requirement that the people have the right to expect from such an institution. Of many of its uses, however, it is not the purpose of the present article to treat, for they do not fall within its scope.

The questions to be dealt with here, although closely associated with others pertaining to the advantages of a zoölogical park, can very properly be considered separately. In one way, the scientific care and exhibition of animals of all kinds in a "zoo" encompasses all other matters involved, while the moral factor, if it may be so termed, enters very largely into our discussion. These captured and confined animals are just as much entitled to their rights and comforts as are the individuals of any community. In illustration of this, abundant material is to be met with in the National Zoölogical Park at Washington, and it must be understood that it is this park, and it alone, which has furnished the examples under discussion here.

With respect to the exhibition of animals in a zoölogical garden, there are a great many thing to be considered, though, generally speaking, these may be arrayed under two requirements, first: the maintaining of the welfare and happiness of the creatures so confined, and second: that their quarters are sufficiently spacious to admit of the occupants enjoying the majority of the habits they exhibit in a wild state. These demands are intimately associated and largely depend one upon the other.

Restricting what is said here to birds and mammals, it is one of the most distressing sights in the world to observe a caged animal in a zoölogical garden, where its home is so small for it that, notwithstanding the care bestowed upon it, it gradually pines away from the many causes that militate against its happiness. We will not fully appreciate what many birds and mammals daily suffer in cramped quarters—often perpetually sunless and utterly lacking in everything they need or enjoy in their native haunts—until we come to understand their several languages; their emotions and expressions, and their actions under various conditions. We have no right—beyond the question of might—to subject these creatures to the tortures that many of them endure in captivity in our zoölogical gardens; and, in altogether too many cases, it is a burning shame and an outrage that we do do so.

There is every reason to believe that, in far too many instances, some of these animals suffer, day in and day out and at all times (except when asleep), precisely what representatives of our own species would under similar conditions. Frequently, their lives are sustained upon a victualage quite foreign to their requirements. Many diseases attack them, often causing daily torture or premature death; while everything incidental to reproduction is interfered with to the mental and physical distress of the captive. Much might be set forth on this, the moral aspect of the question, which would prove to be of decided importance to humanitarians everywhere; but the limitations of space bar further allusion to it here.

Passing to another phase of this question, it is clear that a very poor economy is exercised when a people spends a vast sum of money out of the public exchequer to maintain a collection of living wild animals, for exhibition in a public park, to then be guilty of the glaring error of placing some of the most valuable of those animals in dens, cages, pits, and other miserably small places, where, to be sure, during the life-span of the ani-

mal in any case, its *form and general appearance* may be studied; but where, owing to the lack of the proper additions to perfect its environment, and to the parsimony of space, four-fifths of what it is capable of teaching students of all professions, who come to study it, is utterly lost.

Much is being said and written nowadays about the conservation of our natural resources, which include our fisheries, birds, game, and the rest; but the questions raised in the present article have been, as a rule, almost entirely ignored. Thousands of people resort to our National Zoölogical Park annually; a certain percentage of them are students in various professional lines; many come from abroad to study our animals there, and it makes a vast difference whether such students find the animals they desire to study penned up in box-like cages; confined to courts and dens of rocks by a caging of iron bars—the whole having the appearance of some gigantic rat-trap—or whether those animals occupy quarters where not only their form and appearance may be studied, but as many of their habits as possible.

Some of the conditions under which the mammals and birds are confined at our National Zoölogical Park are, in all particulars, simply beyond the pale of any adverse criticism; while in the case of others, the least that can be said is that they present pictures of daily torture, which would force a protest from the lips of the Sphinx of Egypt. Among the first may be mentioned the beaver, the seals, the otters, many of the wild-fowl and waders, the various species of deer, and numerous others; while, as exemplifying those in the second class, there may be named the bears, the majority of the mammals in the row of cheap cage-boxes shown in one of the illustrations, the condor, and altogether too many others in one of the mammal-houses.



FIG. 2. AN UNHAPPY COUGAR.

It is to be hoped that Congress will soon make far more generous appropriation for the maintenance of this magnificent national institution in each and all of its departments. It is many a year now since its establishment; surely it is about time that it was raised to a level coequal with the plane to which American pride usually rises in such matters, and not remain, through an overcautious governmental economy, at the stage occupied by some modest "zoo" of the provinces.

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But the verities of human life, the common experience of love, sorrow, hope, faith, action, religion, these do not change.—Dr. David Starr Jordan in "The Stability of Truth."



A VIEW OF THE SUNSET IN THE BEAUTIFUL HARBOR OF VAVAU, FRIENDLY ISLES.
Taken with a Goerz-Dagor lens.



AN EIGHT YEAR OLD TONGAN GIRL—A REAL CHILD OF NATURE.

## The Friendly Islands.

BY E. E. THORPE, NEIAFU, VAVAU, FRIENDLY ISLES, SOUTHERN PACIFIC OCEAN.

Towards the sunrising lies a group of comparatively small islands, whose snow-white, sandy beaches are bordered by emerald seas. Fronded cocoanut palms raise their stately heads in the tropical salt breeze, and native houses lie half hidden in the midst of gayly colored trees and flowers. Dark skinned children roll on the sand under the friendly shade, while older ones can be seen searching among the rocks for certain shellfish that are used for food. Formerly the inhabitants of these Friendly Islands, comprising the groups of Tonga, Hasbai, and Vavau, were cannibals. Although they were not of the fiercest type, human blood was mingled with their sacrifices, and every man's hand seemed to be against his neighbor. If only the sparkling seas that break on the white shores of these beautiful islands could speak, what tales of sorrow and of bloodshed could they tell!

The Friendly Islands lie 1,097 miles northeast of New Zealand. The three principal groups comprise about a hundred islands. The native population is 22,000. There are about two hundred and fifty Europeans in the three groups.

The Tongans are a remarkably fine

and well formed race. Especially is this noticeable in the high class families. Their complexion is clear, rich brown, almost approaching light copper color. Many of the young children are nearly white. They are a clean race and in many things compare favorably with the civilized nations of Europe. Formerly their origin was supposed to be Malay, but recently it has been scientifically proved that they are of Caucasian origin. They are hospitable. They delight in flowers, and in annointing themselves with scented oils.

The Tongans believe that they are directly descended from the gods. Their legend relates that one day, centuries ago, before the Tongan Islands, which had been fished up by one of the gods, had been peopled, some of the gods put to sea in a canoe and landed on Tonga. Delighted with the land they remained, and were finally transformed into mortal beings, and peopled the islands.



SHOWING A LEAF OF THE CARPIE (ENGLISH SPELLING OF THE TONGAN WORD "KAPI") PLANT—AN EDIBLE ROOT BELONGING TO THE TARO FAMILY.

The stem measures three feet to base of leaf; length of leaf, three feet nine inches; width, through the centre, two feet nine inches.



A COCOANUT PLANTATION AT VAVAU, FRIENDLY ISLES.

### Commonplace and Common Sense Knowledge.

In our laboratory at ArcAdiA we have been growing luxuriantly for nearly three years a plant that has attracted much attention or perhaps



BUDS AND BLOOM OF TEA.

I should say that we have attracted much attention to it. Every visitor has been requested to give the name of that plant. In three years hundreds of adults and school children have been questioned. Thus far not one has been able to give the name. Recently it was in beautiful bloom with a profusion of expanding buds that made it wonderfully attractive. We believe that this one plant alone has been a good example of the crying need of giving information especially to school children, and to everyone definite notions of commonplace things. Every child and every adult knows the tea plant from the utilitarian point of view, yet we have found that no visitor has practical knowledge of it, nor one that has ever heard that it is grown successfully in the United States, nor of the possibility to cultivate it here on a commercial scale. But that topic we reserve for a future article. Nature should not be known only through the mouth and the stomach. In itself tea is an esthetic plant. From its leaves is made a cheering beverage. Undoubtedly many school children can speak intelligently about the cities and the rivers of China, while they have not the slightest knowledge of the appearance of the tea plant, China's principal product, whether it is an herb, a shrub or a tree. It is a shrub that may be grown readily in any household. It is not hardy, but it will bear considerable cold. In the laboratory aquaria standing near the tea plant have been filled with ice, and iron water pipes only a few feet away from this plant have been frozen and have burst, yet the tea plant has bloomed profusely notwithstanding the intense cold.

It is a regrettable fact that the utilitarian point of view has so gained the ascendency. Before a number of Teachers' Institutes in various parts of the country I have requested the teachers to form a mental picture of the plant that I would name. When all were in readiness, after a pause of a few seconds, I said, "Onion," only to find upon inquiry that every person in the audience had had vision of the edible portion, never of the plant as a whole, nor of its beautiful flower. It would be safe to say that nine-tenths of the teachers, especially in city schools, have no knowledge whatever of the onion plant, and that even a larger proportion or a hundred per cent have no knowledge of the beautiful blossom. It is not unusual in city schools to find both teacher and pupil totally ignorant of the commonplace plants that are used every day for food. To have at least some of these common plants grown in every school would be valuable and practical. A protected portion of a window on the sunny side could easily be arranged so that the plants could be kept there throughout the year. Children and teachers should not only know the tea plant, but they should know the coffee plant and others

equally strange to most people. Even more important is it to know, indeed, there is no excuse for not knowing corn, potatoes and other commonplace things. Life does not consist entirely

Thoreau were writing of this he would say that all people should take copious mental draughts of the esthetic tea plant. I venture to predict that if ARCADIA were to send out an appeal for





COLORED CHILDREN PLUCKING TEA AT "PINEHURST," SUMMERVILLE, S. C.
Illustrations from Bureau of Plant Industry, U. S. Dept. of Agriculture.

of shop. It is possible to know how many bushels of corn to the acre, yet not to know corn. There is an intrinsic, educational, value in even potatoes and cabbages. I fancy that if

financial assistance after an elaborate series of efforts to make the leaves of the tea plant twenty-one and five-tenths millimeters longer, or to measure the length and the breadth of

seventeen thousand stomata or to test the effect of various chemicals on the growth of the plant, we should not be lacking in financial assistance. But when it comes to plain, simple, every-day seeing, to efforts to cultivate the power of observation in adults and young people, aye, there's the rub—that is too simple to be of any value!

## Agatized Fossils.

BY HORACE SYKES, NEWPORT, OREGON.

On the coast of Oregon, confined within the limits of a few miles, are beds of pebbles in which agates are found in great abundance. Newport, a summer resort on Yaquinna Bay, the western terminus of the Corvallis and Eastern Railway, is located in the midst of these beds, and from the dozen or so lapidaries, of which the town possesses without doubt a larger percentage according to resident population than any town in the world, come some of the rarest agates, and greatest curiosities that are to be found.

In these prolific beds are found moonstone of great variety, and fine quality, moss agate of almost every character, cloud or picture agates, the forms in which often represent grotesque or beautiful objects, carnelian, onyx, bloodstone, goldstone, jasper in great variety, agate or moss jasper, and lastly many agatized specimens of animal and vegetable remains. As suggested by the title the last mentioned will be given special consideration.

The author does not set this forth as a complete geological treatise but presents a few of nature's interesting records and non-technical description of them.

Incased in transparent rock coverings are found such remains as tufts of hair, sea urchin spines, and pieces of shells, while different kinds of coral, polyzoa, and all kinds of wood are found entirely formed in agate. There are many other specimens that are unquestionably remains of organic matter, but so entirely transformed or possibly such a small portion of the original organism, as to be beyond identification.

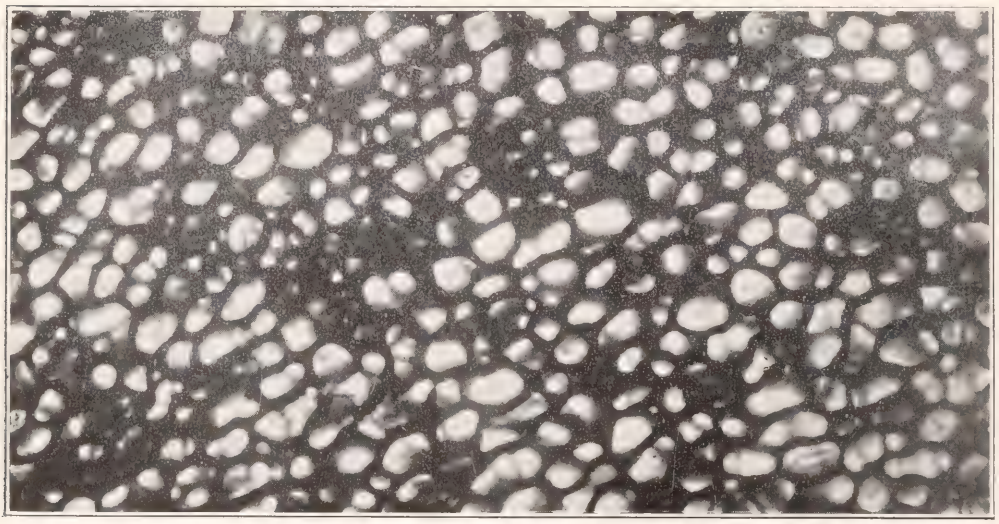


FIG. 1. CROSS SECTION OF A BRYOZOAN "THAT LOOKS LIKE A PIECE OF BONE."

Figure No. 1, represents a cross section of a piece of bryozoan that looks like a piece of bone. It is the inside, or honeycombed portion of a piece of very great size, it makes one think of a sea monster such as the whale. The illustration is the exact size of the specimen, and on comparing with the structure of a whale's bone will be found to be very similar. The portions representing cells are filled with agate, while the structural part is softer and a dark brown color.

Figure No. 2, represents a stone which contains remains of the hair of some prehistoric animal. The tufts are of a very dark brown color, and the individual hairs lay so close together in parts of the stone as to prevent the light from passing through, making it appear opaque in the photograph, while around the edges the single hairs can be seen.

Almost every one has noticed that as a carcass decomposes the hair remains longer than any part except the bones. It is not hard to imagine how it would be possible for tufts to become immersed in water containing the rock forming elements, and be incased in stone and preserved through the succession of ages, a page in nature's great history.

The third and fourth illustrations are of specimens of agatized coral. Figure three is called honeycomb coral, and is by far the most abundant. Specimens like Figure four are rarely found. In these the spaces between the limestone are filled with agate making the whole a mass in which the original coral is represented by the texture of the stone. These as well as the other agate fossils take a very high polish, and are valuable for the making of agate jewelry, as well as for specimens.

The stones of which these agate beds are composed are washed from the great banks of quaternary drift against which the waves of the Pacific are eternally hurling themselves. A fresh supply is ever being brought out and prepared in nature's great lapidary for the use of man. They were not formed in the part of the world now found, but were moved there by some of nature's great agencies.

The illustrations are from photographs from sections by the author, and it may be of interest to some to know how they were made. Figure 2 is of a stone which

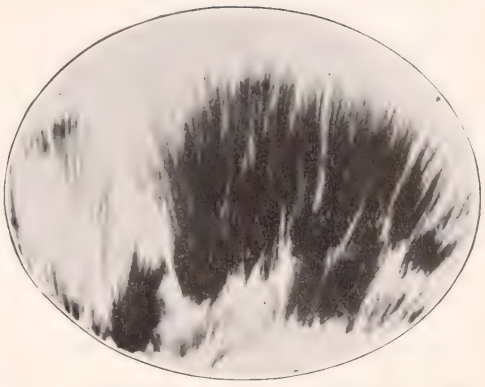


FIG. 2. REMAINS OF THE HAIR OF A PREHISTORIC ANIMAL.

was cut and polished for the making of jewelry. In the taking of this photograph the stone was fitted in an opening in a piece of cardboard. The cardboard was placed in the end of a long box facing the light. This was done to prevent reflections on the polished surface. The camera was placed at the other end of the box and the photograph taken of the light transmitted through the stone. The remainder of the illustrations are from photographs made without the use of the camera at all. The dark room was used instead. The specimens from which these were made were very thin slabs sawed for the purpose, and the photographs were made in a very novel and entirely original way. A dry plate was laid on the dark room table, and the thin

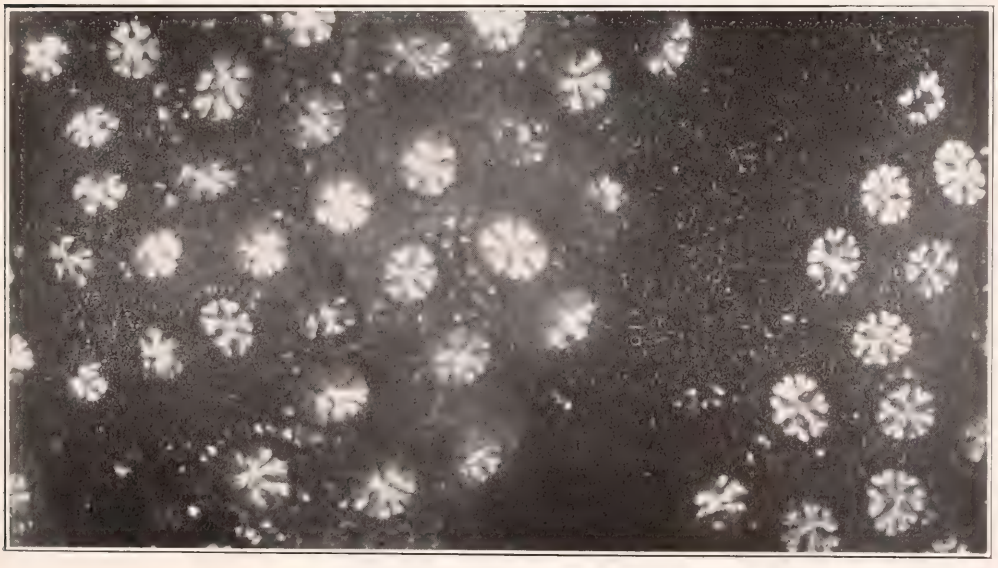


FIG. 3. AGATIZED FOSSIL SOMETIMES CALLED HONEYCOMB CORAL.

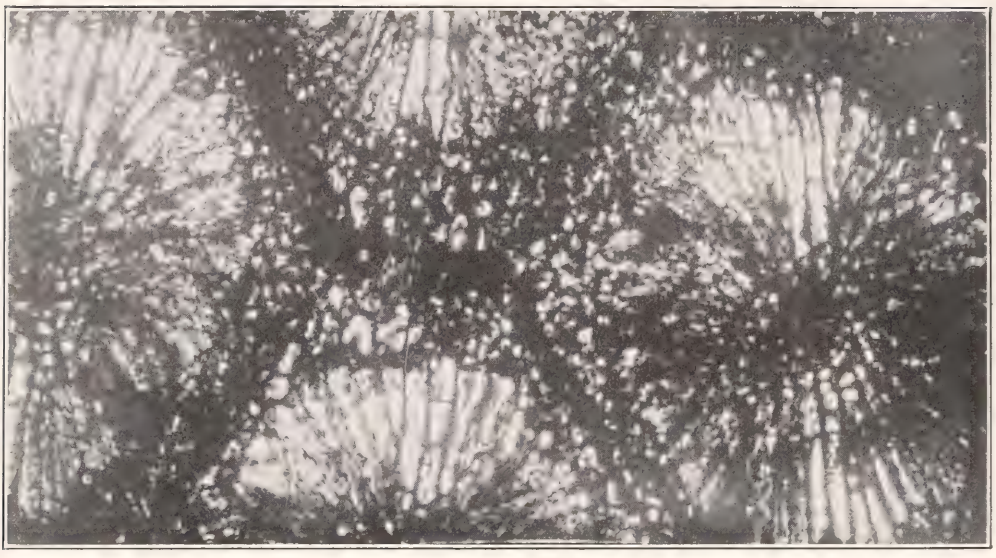


FIG. 4. A RARE FORM OF AGATIZED CORAL OF INTERESTING FORMATION.

slab of stone laid on it, in direct contact with the sensitive film. A large parlor match was then burned a short distance above, and the shadow cast by the stone impressed itself in the sensitive emulsion of the plate. In all the illustrations the detail in the original specimens is rendered faithfully. [The author's illustrations have been enlarged for publication.]

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## An Easy Experiment with Electricity.

BY F. R. GORDON, YPSILANTI, MICH.

An instructive experiment on the conduction of electricity by a liquid can be performed wherever a commercial lighting circuit is within reach. Let us suppose the voltage is 110, which is probably the one which is most commonly used. It may be either a direct or alternating current. We shall also suppose that a common 16-candle-power lamp is at hand connected with a few feet of double lamp cord. The experiment is as follows:

Switch off the current from the lamp and cut one of the two cords. Cut off the insulation for about an inch at each of the two ends made by cutting the wire. Place these two ends of wire down in a tumbler of water, and make sure that they do not touch each other. When you have made everything ready, switch on the current. The lamp will probably not light up. If it glows at all, it will be but faintly. Now drop into the tumbler, a little at a time, a few grains of common salt, and stir carefully. As you stir the liquid and the salt dissolves, the lamp will glow more and more brightly until it reaches pretty nearly its full brilliancy.

The explanation of this phenomenon is based upon the fact that electricity is carried through a liquid by means of so-called **ions.** There are so few ions in water that it conducts very poorly; but when a little of the salt has dissolved, some of the molecules of salt (which is a compound of an element called sodium and another element called chlorine) split in two. This splitting apart gives rise to ions of sodium and other ions of chlorine. Hence as more and more of these ions are produced in the water, the more rapidly the current of electricity is carried from one end of the wire to the other. Since all this current has to pass through the lamp, the filament of carbon is heated hotter and thus glows more brightly.

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No doubt my life as a farm boy has had much to do with my subsequent love of nature, and my feeling of kinship with all rural things. I feel at home with them; they are bone of my bone and flesh of my flesh. It seems to me a man who was not born and reared in the country can hardly get Nature into his blood, and establish such intimate and affectionate relations with her, as can the born countryman. — "Our Friend John Burroughs," by Clara Barrus.



# SEEING BY AID OF THE LENS

**A Monument to a Great Optician.**

All over the country may be found here and there amateur and professional microscopists that pride themselves upon their efficient outfit. Among their lenses they probably have one or more made by Robert Tolles, a lens maker that gained a world-wide recognition for his optical inventions and improvements. The following clipping from a newspaper has been sent to us.

"Robert B. Tolles was one of the notable men whose early years were spent upon a New England farm. It would seem that there was a special influence from the soil that fastened itself upon the youth of New England in the early part of the nineteenth century, so many men of mark and genius developed from laborious and practical country life.

"Robert's father would have become one of the important inventors of this country had he not been hampered by poverty. It is from the consideration of such lives as his that there has arisen the idea of providing materially for men of genius, so that they may give the world the benefit of their thought and labors. Robert saw his father's disappointment and failure, and in his mind was a determination to master some of the problems of life and to better his condition.

"He worked on his grandfather's farm and did his share to support the family till he was quite a youth. One day when he was taking a holiday at Canastota, New York, he paid a visit to the workship of Charles A. Spencer, a lensmaker. Tolles was so fascinated by what he saw that he soon after induced Mr. Spencer to take him as an apprentice. Day by day Robert became more absorbed in the possibilities of his work, and his ability was a constant surprise to Charles Spencer.

"When he was thirty years old Tolles went into the business of lens making for himself. He had already attracted the attention of scientists, for



ROBERT B. TOLLES.

he had invented and patented a solid eyepiece, and in 1866 he took out a patent for a stereoscopic binocular eyepiece.

"He started his business at Canastota, but nine years later he went to Boston and organized the Boston Optical Works. He was the superintendent for four years, but then became the proprietor of the business and spent the remainder of his life in its development. He devoted all his en-

ergies and gifts to improving the microscope, with the result that he won world-wide recognition.

"Tolles was associated with Charles and Herbert Spencer in the invention



THE MICROSCOPICAL MONUMENT.

of a three system lens that all lens-makers accepted, although it changed the entire opinion and practice of making and using microscopes. He also invented telescopes that had remarkable penetrating powers.

"His real genius should have given him happiness and comfort in life, but he met the sad fate of many an inventor. He had all his life had weak lungs, and in his frenzy of ambition and activity he constantly neglected his health, so that the last ten years of his life were filled with hard practical labor to provide for his simple material needs.

"He worked to the last, and even upon his deathbed he had microscopes brought to him and tested lenses. A few minutes before he died he thought he was at work on a lens, and suddenly he stopped, said 'good-by,' and breathed his last sigh."

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About eight years ago I had some correspondence with an enthusiastic gentleman with the old-time amateur spirit of microscopy, Mr. Henry M. Brown, of Natick, Massachusetts. He was for many years a subscriber to "The Observer" and continues as a subscriber to THE GUIDE TO NATURE.

He is one of our scientific friends that strongly urged the establishment of this magazine, but he desires with the editor that it may be prominently developed along the line of seeing things by the aid of the lens. Under date of December 25, 1906, he wrote as follows:

"I am rereading my 'Observers' and getting lots of pleasure out of them. Why can't we have a scientific magazine like that now? There are now people who are hungry for such. The people who wrote many of the papers in the old magazines have passed to their reward, and we who now read them are passing happy hours with old friends. I had a letter from Alfred C. Stokes, M.D., of Trenton, New Jersey, and he seems to be hungering for such a magazine. I haven't come to you for so long that I must be a perfect stranger to you, so my words I trust may therefore be more gratifying to you. I have recently had some photographs of Robert B. Tolles's monument, erected by the N. E. Optical Company in Mount Auburn. I would be pleased to send you each with my regards."

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"Science" for March 22, 1912, contains an article by George W. Rolfe, on the death of Charles X. Dalton. From that article we quote as follows:

"For one or two decades preceding and immediately following the Civil War there was a widespread popular interest in the microscope among cultivated people as a form of amusement, although much serious scientific work was done likewise. Microscope clubs were common throughout the land, and in England as well. Many became experts in microscope technique and there was an active demand among the wealthier of these enthusiasts for the best instrument that could be produced, irrespective of cost. This stimulated the instrument makers of England and America to use the utmost skill and best workmanship, and in the hands of famous opticians, among whom Tolles with his giant genius shone preeminent, the microscope was carried to a high degree of elaboration and efficiency. It was under such conditions that Charles Dalton was inspired to use his skill

and cunning as an artificer of metals. Dalton was not a workman for wages only. He had that true love of his craft and a pride in his workmanship which characterized the true craftsman



CHARLES X. DALTON.

and which is vital for best results. He would never do mediocre work and was his own severest critic of his product. He made many of his tools and appliances and accomplished much by primitive but cunning methods which are a lost art to the mechanician of to-day, or made possible only by the use of elaborate tools.

"The wane came in popular interest in the microscope as a recreation for the dilettante and the cheap compact "continental" instrument, of high optical efficiency but reduced to the simplest terms as to finish and accessories, in short a laboratory tool designed solely for the special work at hand has become common in our schools and colleges. Such instruments of good quality are now turned out by the thousands by the great manufacturers, using labor-saving machinery and modern systems of divided labor, and a good microscope is cheaper to-day than formerly. The elaborate instruments of Tolles and other great opticians of the past generation, instruments in which cost was subordinated to every detail which added to convenience and efficiency, masterpieces of ingenious and perfect workmanship, are no longer made, and with them is disappearing the old-time workman whose knowledge and craft partook almost of the dignity of a profession."

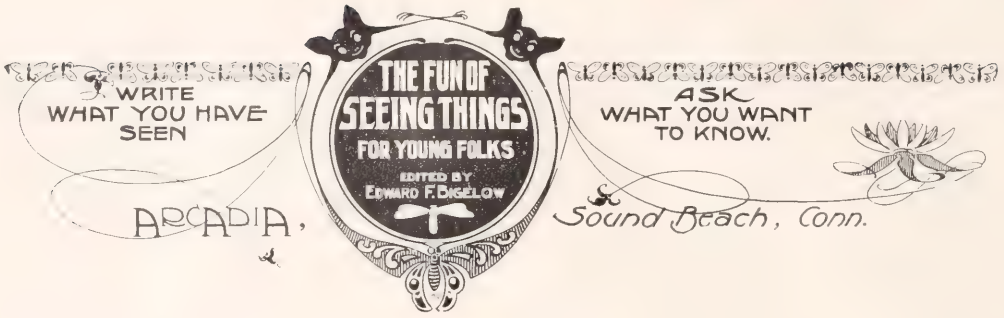
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### Our Educational Vaudeville.

If Saint Augustine, who was punished when he was a little lad because he loved to play (and playing, he observes, is the business of childhood), could see the glorification of play in twentieth-century schoolrooms, he might enjoy the spectacle, and question the results. Nothing is too profound, nothing too subtle, to be evolved from a game or a toy. We are gravely told that "the doll with its immense educational power should be carefully introduced into the schools," and that a ball, tossed to the accompaniment of a song insultingly banal, will enable a child "to hold fast one high purpose amid all the vicissitudes of time and place." And when boys and girls outgrow these simple sports, other and more glorious pastimes await them; pastimes which will teach them all they need to know, without effort and without exaction. Judge Lindsey gives a glowing description of the schoolroom of the future, where moving pictures will take the place of books and blackboards, where no free child will be "chained to a desk" (painful phrase!), and where "progressive educators" will make merry with their pupils all the happy day.—Agnes Repplier, in the January Atlantic.

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If there is a ruling and creative power to which the existence of our cosmos is due, and if we are its one and unique highest outcome, able to understand and to make use of the forces and products of nature in a way that no other animal has been able to do; and if, further, there is any reasonable probability of a continuous life for us to still further develop that higher spiritual nature which we possess, then we have a perfect right, on logical and scientific grounds, to see in all the infinitely varied products of the animal and vegetable kingdoms, which we alone can and do make use of, a preparation for ourselves, to assist in our mental development, and to fit us for a progressively higher state of existence as spiritual beings.—Alfred Russell Wallace in "The World of Life."

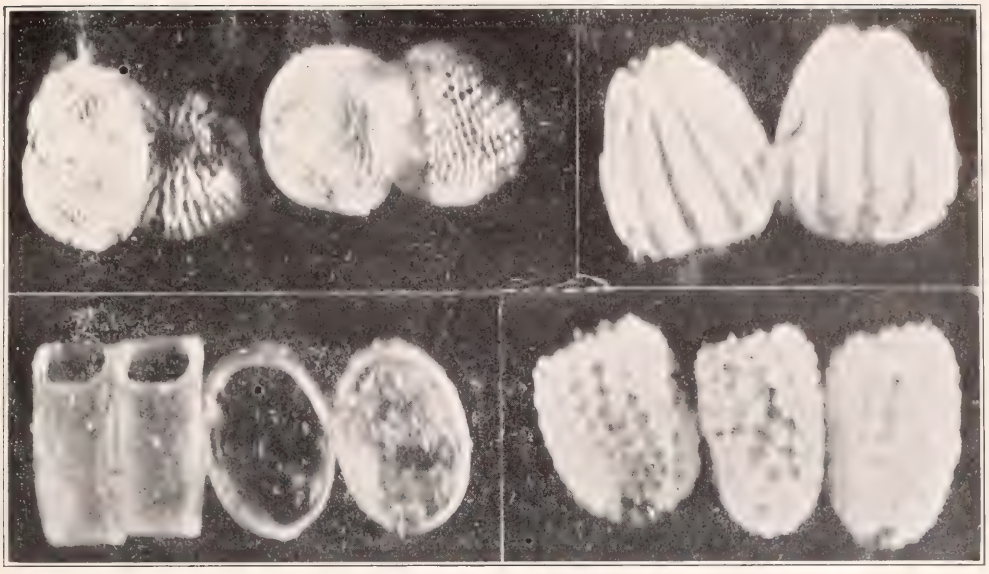



### The Fun of Seeing Eggs of Moths and Butterflies.

Scientists call moths and butterflies by a long name, Lepidoptera, meaning scale wing insects. To say that there are many beautiful forms among the moths and the butterflies, is to say a trite and commonplace thing that everybody knows. To say that their varied forms and varied, often brilliant colors are appreciated by all that see them, is equally trite and well known. But boys and girls that use the microscope know something about the curious forms of the mealy material or scales that at a touch are rubbed from their wings. But there is one other subject connected with these interesting insects that is not often mentioned. To me this is perhaps the most interesting of all. It is the satisfaction of collecting and mounting the eggs. Such

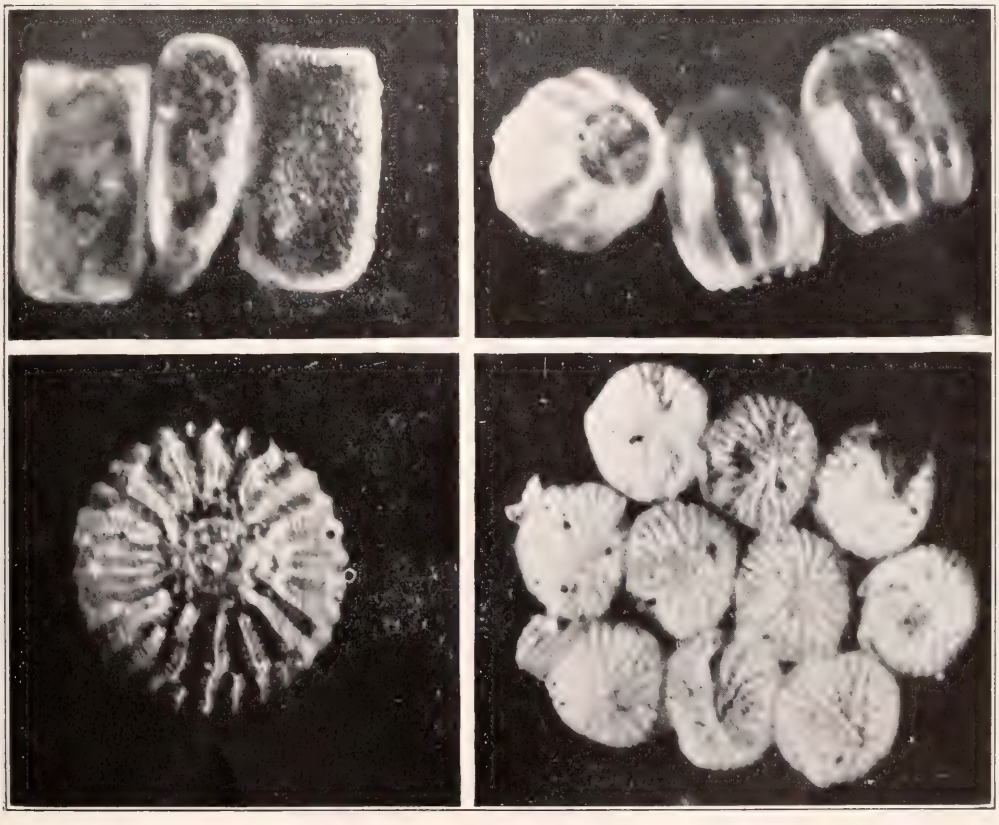


A "NEST" OF MISCELLANEOUS EGGS OF BUTTERFLIES.



THE CURIOUS MARKINGS SHOWN UNDER THE MICROSCOPE.

eggs may be obtained from twigs and leaves in various places where they have been deposited in tiny patches or little dots. They will often be in a cluster, perhaps a half or a quarter of the size of your little finger nail. Many show beautiful patterns when viewed with a simple pocket lens. There is a lot of fun in collecting the various forms and in arranging them



**REMARKABLE "CUPS" AND "ROSETTES."**

in a collection. This arranging may be done with little difficulty, if you have a sharp eye, a steady hand, and know how to use a simple pocket lens. Take a piece of black cardboard, smear a little mucilage on it, and pick up carefully one after the other of these little eggs by the aid of some slender, pointed instrument—a pin or a very fine-pointed toothpick and gently place them on the card. They may be arranged in miniature patterns, much as shells are sometimes arranged on the lawn, especially of some old-fashioned house near the seashore.

You should, of course, wait until the eggs have hatched, and the little caterpillar has escaped, as it usually does at one end of the egg, leaving a hole, and making the empty shell look like a cup. Some resemble baskets and some are ornamented by peculiar, often beautiful markings.

### Young Partridges.

BY RUTH CAROLYN W. DOGGETT, SPRINGFIELD, MASSACHUSETTS.

Just outside a sleepy country town not far from my home, a friend of ours owns a beautiful woodsy estate called "River Bend." It is the delight of youthful hearts to wander through the pine woods, climb the hilly paths bordered with blackberry bushes, and pretend that the cedars standing there with such primness and regularity are in an Italian garden.

As we were leisurely walking up one of our favorite pathways, nibbling at blackberries, admiring the scenery and talking about things in general, we suddenly heard a muffled drumming.

"A partridge!" whispered our host, creeping cautiously along like an Indian on the warpath. Instantly we stopped our chatter and tried to emulate his example.

Again that peculiar drumming—and a sudden whirr and rush of wings as a mother partridge flew close by us and high into the air.

A moment later we discovered four or five tiny balls of buff-colored fuzz hiding their silly little heads under last year's dead brown leaves. As we



"I PICKED UP TWO OF THE LITTLE THINGS."

came nearer, one enterprising youngster scrambled across the path into the underbrush.

I picked up two of the little things and while my picture was being snapped we could hear the mother bird anxiously drumming to attract our attention to her. Under a scrubby pine tree we found the nest, but we left it and the little partridges unmolested and sauntered on uphill talking excitedly about the cunning, fluffy little birds, and our pleasing experience.

### Flossie's Bright Reply.

One evening, when the mosquitoes were very troublesome, Bobby cried out, "Oh, dear, if these mosquitoes don't stop biting me, there'll be nothing left of me!"

"Oh, no!" said Flossie, "the bites will swell up and make you bigger than ever!"—What To Do.

### All Treated Alike by Me.

This cat looks as if she were carrying a dead duck or, if the duck is not dead, that she is treating it cruelly. But both suppositions are wrong. The duck is the cat's adopted foundling and she evidently believes in absolute impartiality. She carries her kittens by the nape of the neck, and she sees no reason why, when young ducks come into her family, she should not treat them in a similar way. The photograph is sent by Mr. B. H. Hinderman, Omro, Wisconsin. He says that the cat adopted the young duck, and carried it about as she would a kitten. She cared for it until it was almost full grown. The occurrence took place on the farm of Mr. S. H. Perkins, Oshkosh, Wisconsin.

It is evident that this cat is not in sympathy with the modern educational methods, in which everything is adapted to the individuality of the child. The duck would probably have preferred to waddle in the water, but "Nay, nay," says the foster mother, "your wishes are not to be consulted. I am not looking forward toward the younger generation, but to the time-honored traditions of the past. In our family for generations beyond the recorded history of cats, no cat has ever gone in to swim and no cat would think of wading in water. On the contrary, mother cats have always carried their kittens by the nape of the neck. No duck geniuses are tolerated in this family. If you come into the cat family you must accept the conditions. I shall therefore carry you by your neck."

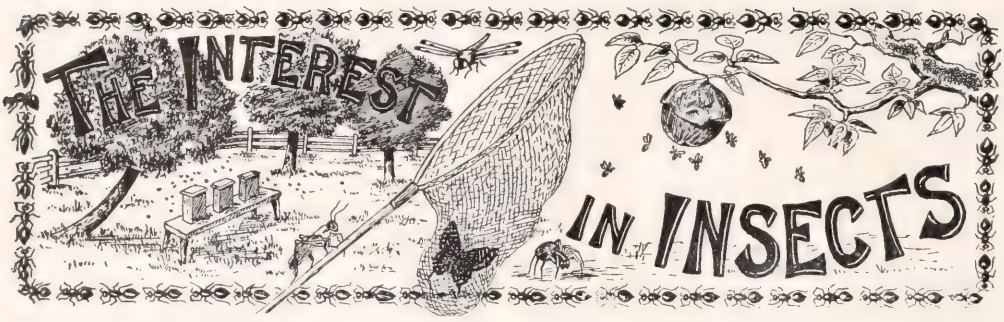
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### What to Eat.

If Prof. G. Stanley Hall is right in saying a boy is what he eats, the youth who would be a historian should partake of dates. The prospective electrician should eat currants. The one who would become a policeman should choose the beet. In order to drive a cab, perhaps one should dine off cabbage. As a matter of course, if the baseball player would be in condition to hold the "hot ones," that come his way, he should never indulge in "muffins," and, by the same token, the automobile chauffeur should not partake of turnovers. Anyone not abreast of the times or behind with his work should create a little fondness for ketchup and those wishing to get ahead will eat cabbage. To be agile and active, all that is necessary is to choose a diet of hasty pudding. Persons wishing to cultivate a friendly spirit toward all mankind will eat peas and hominy, while those disposed to the contrary will have a salad made of peppers and snap-dragon, and artists wishing to paint still life will select a diet of sardines in oil.—Sunshine Bulletin.



THE CAT ADOPTED A DUCK AND CARRIED IT AROUND AS SHE WOULD A KITTEN.




## About. Bugs.

BY J. R. DE LA TORRE BUENO,
WHITE PLAINS, N. Y.

In England, the name "Bug" is never uttered in polite society. It has only *one* meaning, and polite people are presumably totally unfamiliar with that for which



THEY REALLY ARE BUGS.

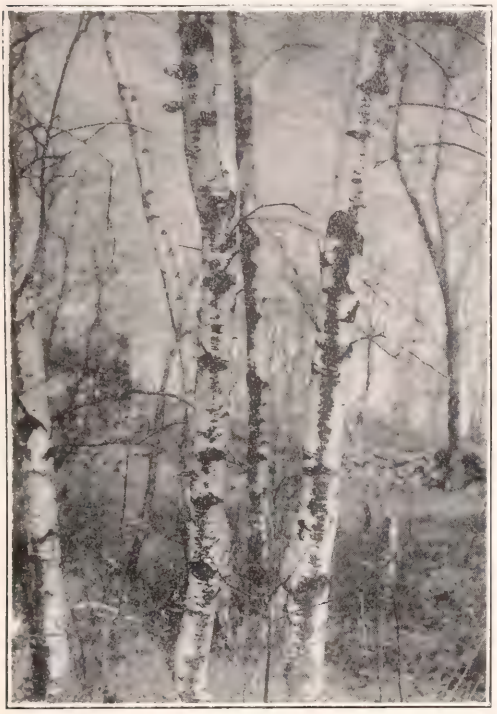
it stands. In this fair land of ours, however, this term is applied indiscriminately and erroneously to any beasty with a number of legs, from a fly to a thousand legs although strictly it applies only to the true bugs, about which alone speak. An English entomologist, G. W. Kirkaldy, has sought the origin of this name in the Cymry, or Welsh, and the Gaelic of olden days. According to his conclusions, the Welsh "bwg" (pronounced *boog*), means a spirit or ghost, one that walks in the night, whence our "bogey" which we interpret now as a fearsome thing, although it originally meant a spirit. So, also, that passage in the famous "Bug" Bible, where it is written "He shall not fear the arrow by day nor the *bugge* by night" and which now reads "*terror* by night," means, in fact, the spirit or ghost. So it is easy to see how an ignorant people being troubled by night by something they did not see, dubbed it "bugge" or ghost.

Now and then one reads an item in some magazine or newspaper about the finding of bed-bugs, chinches, "mahogany flats," or "lovely strangers" under the bark of logs. Of course, this bit of newspaper science has led many to the entirely erroneous belief that the vermin are really wild things, which, coming into civilization, are quickly corrupted by it, just like any other savages. This is not the case however, for the pest has been a companion of man for ages, and, in consequence of its parasitic habits, has lost its wings, which are now represented only by little scales. It has learnt to know man and his ways, and in the long course of time, has developed a perfectly uncanny aptitude for circumventing him and his schemes for its destruction. But why spread myself out on this topic? Those who have been so unfortunate as to be its victims will not care to be reminded of their sufferings, while those in blissful ignorance are best left so.

Of course, there is some foundation for the belief that they are to be found in logs. There are some flat, brownish bugs about the right size to be mistaken for the others whose abode *is* under the loose bark of dead or dying trees. But, except in the young stages, these have wings, save one kind that lives under the scaly bark of pine trees, which sometimes is found wingless, at others fully winged, and in all degrees of wingedness in between. These are known to entomologists as Aradis, or, as Comstock calls them, flat bugs. In their favorite haunts they can be found at all seasons of the year. Their glistening white eggs are elliptical in shape and are deposited in clusters on the inner side of the bark, but the bugs themselves generally cling to

the wood under the bark, according to their kind.

Of the flat-bugs that are found in this country, in the East, *Aradus similis* is the most interesting in its choice of abode. Where the white birches shine ghostly in the leafless winter woodland, there he abides—but not in the living tree. He slumbers peacefully through



"WHERE THE WHITE BIRCHES SHINE."

the rain and snow and sleet snug and warm under the loosened bark at the base of the trunk, where dissolution has begun to separate it from the wood. There is, so to speak, not much head-room, but the bug is as thin as paper and it contrives to work its way in.There you find in little colonies the grayish, white-spotted young, and the black, glassy-winged adults, torpid and motionless with the cold, sometimes, in very severe weather, covered with a white hoarfrost. Hold them a moment in the warmth of your hand, and first the white-ringed antennæ will slowly move, and then before you know what is up, the short little legs carry the beasty away on a run. If you touch him, he becomes motionless and "plays 'possum" for as long as he imagines the danger lasts, and then, away again. When spring quickens all living things, they come to life, and as the days grow warmer, they seek their summer abode, in and about the white fungus *Polyporus betulinus,* that juts out from the trunks of the dead and decaying white birches. Sometimes they wander into the fungus, itself, but their regular dwelling place is at the base of the fungus, where it springs from the trees. Here it is that the young couples start housekeeping, and when by the middle of summer they pass away at a ripe and hoary old age, they leave behind them a new generation that spend their lives in the same way. And so on, from year to year, since time was until time shall be no more.

There are many other kinds of true bugs, and in the tropics they glow with the most beautiful iridescent golden tints, in all the glory of purple and royal blue. Others again have the most peculiar forms and habits. Certain little bugs found in Spain in the Pyrenees, are covered with spines; others living on the seashore and hiding in the sand are of dull grays and very fuzzy. Some kinds that burrow in the earth have broadened front legs to help them dig, just as the mole has. Others, the *Halobates,* live on the surface of the ocean, hundreds of miles from land. Some of the tropical bugs have the hind legs broad and leaf-like in rich colorings. And finally, in the deeps of ponds and streams dwell the fiercest and the most active of the bugs, from the water boatmen or back-swimmers, to the big electric light bugs, so-called, which we find under the electric lights in city and village, sometimes in great numbers. In South America these last grow to a length of five and even six inches and attack and kill fish three and four times their size.

How can a true bug be told from any other kind of insect? Because it is peculiar in having a sort of jointed beak bent under the head, and all other insects have jaws or, like the butterflies, have a kind of proboscis or trunk which curls up into the head. Bugs have rather shield-shaped bodies in many instances, and the wings are folded flat on the back in those which have the base of the wing thick and opaque with the end thinner and transparent. The forms in which the wings are all clear and membraneous carry them over the back

like a gable roof, and among these the general example is the seventeen-year locust. But in what precedes only the half-winged forms, or *Heteroptera,* have been referred to. Many of these have very strong odors, arising from the evaporation of a volatile liquid which is ejected from special openings in the underside of the body between the legs. This gives them the rather vulgar name of stinkbugs, and anybody who wishes to know what some of the odors are like need only bring to mind the nauseous flavor one strikes in blackcaps or blackberries. That's it. Others, though, are said to give forth a more or less pleasant fragrance, like ripe pears, but I have not met them. It has been found that the vapor is injurious and obnoxious to other insects.

Perhaps in the future I may be privileged to write about the kinds that live under and upon the waters, and their many adaptations to cope with problems of food, respiration and locomotion.

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**Arguments in Behalf of Nature Study.**

"The Boston Sunday Globe" has been continuing the discussion of the question, "Are We Paying Sufficient Attention to Natural History?" We have had four prominent naturalists contributing to this discussion. We quote a paragraph from each as follows:

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HUMAN PROGRESS IS DUE TO ITS STUDY.

Here in New England a century ago farm life compelled every one, of necessity, to learn the ways of nature. Modern gregarious city life loses the tang of the earth. Now comes an awakening to the fact that the conservation of natural forces is for man's benefit. The widespread discussion of eugenics, the lately established chair of genetics at Harvard, zoos and aquariums, bird clubs and boy scouts, protective legislation, all are evidence of renewed regard for natural history.—Ralph Davol, Author and Farmer.

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IT HELPS TO MOLD ONE'S CHARACTER.

Almost daily I hear expressions of regret from people who realize, perhaps too late, how much more they might be getting out of life if they had but a little more intimate knowledge of our common birds, our common quadrupeds, our wild flowers, trees and shrubs. I believe that if our children were given sufficient instruction in natural history not only to arouse in them a love for the out-of-doors, but to give them a reasonable introduction to the dwellers of the woods and fields and streams, they would find themselves in the presence of one of the greatest possibilities for happiness to be found in this world—happiness not dependent upon wealth or social position or any other condition not within control of the average citizen.—Ernest Harold Baynes, Manager of Meriden, N. H., Bird Club.

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"IT TENDS TO DEVELOP THE INTELLECT."

With utilitarian aims constantly in view, we are losing sight of the necessity for developing our people along intellectual, esthetic and spiritual lines. It is our moral duty to give to our children this training and create interest in the study of nature in order that the rich and poor, the old and young, the dweller in city or country, may realize the pleasure and profit which can be derived from this free and abundant source. We must give as much attention to the avocations as to the vocations, for it is fully as important to learn how to live as to know how to earn a living.—Frances Zirngiebel, Teacher of Biology, Dorchester High School.

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NATURE STUDY ONE OF THE ESSENTIALS.

The great theme of art and literature, next to human life, is the life of nature, a knowledge of which is no less essential for him who would appreciate than for him who would create art in literature. The finer, deeper things are lost on him whose oaks and elms are mere trees. Along with the teaching of a child to read should go the teaching of him to know the face of the fields. He had better be without a knowledge of words, mere words, than to go lacking a knowledge of the birds and beasts, the flowers, the seas and stars—the universal language of life—that is, if the child is going to write later on, or read, or live.—Professor Dallas Lore Sharp, Author and Student of Nature.

# THE HEAVENS IN JUNE

## The Heavens in June.

BY PROF. ERIC DOOLITTLE OF THE UNIVERSITY OF PENNSYLVANIA.

The planet Saturn, which for so many weeks has been sinking in the west, will definitely withdraw from the evening sky during the present month and become a morning star. Among the brilliant constellations and planets which fill the western heavens it will hardly be missed, however, except by the possessor of a small telescope who is accustomed to watching the appearance and changes of its wonderful ring system and the motions of its satellites, especially as the very brilliant Venus, which replaces it, has now become the most conspicuous object of the entire heavens.

Toward the third week of the month the planet Mercury will attain its greatest distance east of the sun and will be in such a favorable position for observations that everyone who has not hitherto seen this little world will have an opportunity of easily viewing it. At this time it will be no less than one and one-half hours east of the sun and so far north of the celestial equator that it enters the borders of our evening map. The observer should not fail to look for this most interesting little world at this time.

Another most interesting planet,




Figure 1. The Constellations June 1, 9 P. M. (If facing south, hold the map upright. If facing east, hold East below. If facing west, hold West below. If facing north, hold the map inverted.)

which is steadily approaching the evening heavens, is the great Jupiter, but this will not enter our evening sky during the present month. During the early morning hours, however, it is most conspicuous as it shines out with its golden radiance in the south, on the eastern border of the wonderful summer branch of the Milky Way.

### The Stars in June.

Beside the planets, or Wandering Stars, whose positions in the heavens are continually changing, the regular, ceaseless progression of the constellations has, since last month, considerably modified the face of our evening sky. Arcturus, that immensely great and distant sun, now rides high in the heavens in the south, the brilliant groups of Taurus, Orion and Canis Major have disappeared for the present year, and Gemini has already sunk halfway below the ground. But in the southeast we see the striking Scorpion, almost entirely risen, while bordering the eastern horizon from the south through the east to the northwest is the beautiful summer branch of the Milky Way, bearing upon its golden stream the bright constellation of the Swan. To the south is Aquila, with its bright star Altair at A, Figure 1, a yellow star which is drifting rather rapidly across the face of the heavens notwithstanding that it is so far distant from us that the light with which we view it started on its long journey toward us nearly sixteen years ago.

To the right of Altair is the singular little sky figure known as the Dolphin, or Job's Coffin; above this and lying along the exact center of the Milky Way, is the beautiful Northern Cross, now entirely risen above the ground, while above the Cross and now halfway to the zenith, there shines out Vega, the most brilliant of all the stars of the northern sky.

The re-appearance of these summer stars has again brought the wonderful cluster of suns in Hercules into favorable position for observation and

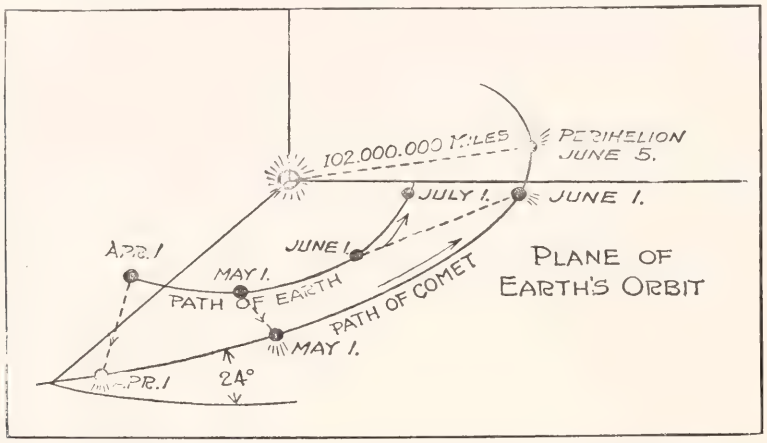



Figure 2. Showing the path of the new comet in relation to the moving earth. The comet is now rapidly receding from us.

the observer should not fail to examine this with a small telescope. It will be found at the point B, almost in a straight line between the stars C and D. It is indeed so brilliant that it may be clearly seen with the eye alone when the air is clear and the light of the moon is absent. But in even a small telescope the appearance of this cloud of suns is one of marvellous beauty. There are here thousands of stars which from the immeasurable depths of space have been gathered together into one compact mass, and although great streams of suns extend out from the cloud in every direction it still has an approximately spherical form. In a small telescope only the stars near the borders are separately distinguished, those nearer the center merging into one uniform light. But under the highest powers the swarm is resolvable to its very center, no less than sixty thousand separate stars having thus been counted. Whether any or all of these distant suns have systems of worlds, more or less like

our own, revolving about them, we at present have no means of knowing.

**The Planet Mercury.**

This most interesting little world will be in so unusually favorable a position for observation during the present month that the reader should not fail to obtain a view of it. On the evening of June 18, he will find it shining in the twilight glow, far to the northwest for an hour and a half after sunset, but it also may readily be detected on several successive evenings both before and after this date. The path which this planet pursues about the sun lies far within the orbit of Venus, Mercury, in fact, being but little more than one-third as far from the sun as the earth is, and consequently the planet is almost always hidden in the sun's rays It can only be seen with the eye just after sunset or just before sunrise a short distance from that part of the horizon below which the sun is shining.

When, however, the observer sees the planet for the first time he will probably be surprised by its brilliancy; toward the middle of this month it will shine with nearly twice the brightness of a first magnitude star, a brilliancy due to the intense sunlight which falls upon it, for upon any part of this little world seven times as much light and heat are being poured down as upon a similar part of our earth.

The year on Mercury is only eighty-eight days long, so that on this planet each of the four seasons would be less than a month in duration. But beside this, its path about the sun is so far from being perfectly circular that when the planet is nearest the sun it receives more than twice as much light and heat as when farthest away. To an observer on the planet the sun would appear more than twice as large as we see it, and if we add that one-half of this world is always turned toward the sun and one-half is turned away from it, so that on one-half of the planet there is perpetual day and on the other half unending night, it becomes evident that conditions on this little world must be very different from those on our own.

**The Planets in June.**

Venus continues to shine brilliantly in the west throughout the month. On June 1 it is near the center of the constellation Gemini, but by June 30 it will have moved out of this constellation, entirely across Cancer, and into the western border of Leo. Having passed Saturn on May 16, it is now drawing continually nearer to Mars, but it will not finally overtake this planet until August 5. Venus in the telescope now appears about as the moon when three days past the full; it will not become one-half full and enter the crescent phase until September 18, and from now until more than a month after this date it will continually grow brighter.

Mars is also moving rapidly eastward but its motion is somewhat slower than that of Venus and hence it is being steadily overtaken. During the month it moves from the eastern

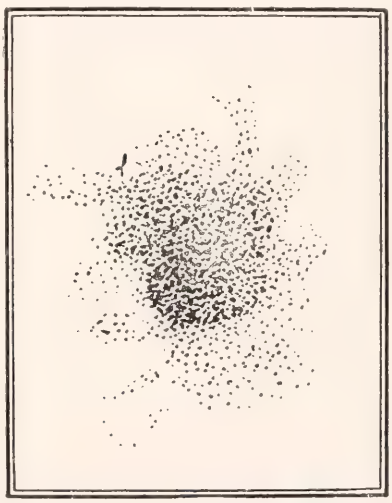


Figure 3. The Star Cluster in Hercules (at B, Figure 1), as drawn by Sir John Herchel.

borders of Cancer to a position a little left of and below the bright star Regulus. The announcement recently made that traces of water vapor have been found in the atmosphere of Mars, will, if confirmed, possess the highest interest and importance. For the known presence of this water vapor would render it practically certain that the polar caps of the planet are true snow caps and would indicate that this world is as warm or warmer than our own. If the result is made certain, we will therefore know that Mars is far more suited to the existence of such forms of life as exist on our own earth, than we have hitherto had evidence of its being.

Saturn is now too near to the sun to be observed, and on June 13 passes to the east of that body and becomes a morning star.

Jupiter rises at 11 hrs. 55 min. P. M. on June 1, and at 9 hrs. 58 min. P. M. on June 30. It will be found in the south toward midnight.

On June 22, at 1 hr. 55 min. A. M. (Eastern Standard Time) the sun will reach its highest position in the heavens. At this it will cease moving upward from the celestial equator and begin to move downward among the stars. This day will therefore be the longest day of the present year.

### The New Comets.

The first comet to be discovered during the year 1914 is a faint telescopic object which is now moving northeastward among the stars along the path MN, Figure 1. It was nearest the earth on May 15, but even when in this most favorable position it required a small telescope to render it visible. As shown in Figure 2, it is now receding from us and its brightness will therefore rapidly diminish.

A very distant comet, discovered last December, may become brilliant toward the close of summer. This comet must have great intrinsic brilliancy, for when first seen it was both farther away from us and also brighter in appearances than was Halley's comet when it first impressed its image upon the delicate photographic plates with which it was being searched for. During September this comet will move through the constellation of the Greater Bear and will hence be at all times well above the ground, in excellent position for observation. But whether it will then be a conspicuous object or whether it will even be visible without telescopic aid, cannot at this early date be foretold.

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### We Will Plant With the Moon.

An astonishing editorial, entitled "Astronomy and the Garden," appears in the January number of "House and Garden." The editor thinks that after all there may be truth in the belief that the moon has an influence on the growth of plants. Will he start a department of instruction? He will. Perhaps, for example: The moon is now in first quarter; plant your pumpkins. The moon is now new; plant your moon flowers. The moon is now full; harvest your cider apples. The moon is now in the last quarter; time to plan for squash pies.

He seriously informs us that he will offer us every encouragement and facility for such study, in the new "Gardener's Calendar," and that there will be found, month by month, and day by day the data necessary for planting according to the moon's phases. All of which is interesting and perhaps important, but as the experiment has repeatedly been made without appreciable effect one way or the other, it seems superfluous, not to say a loss of energy to repeat. Still, it has been discovered that it is always at least safe to plant in "the dark of the moon," especially potatoes, whose eyes are supposed to be injuriously affected if exposed to moonlight soon after planting. We all know that every sailor that sleeps on deck in the moonlight becomes permanently blind. So with potatoes. We all know that a potato blinded by moonlight is peculiarly liable to the "potato blight," because it cannot see the germs of the "blight," and so avoid them. This is all that we know on this subject, but it is important and valuable. Like Mark Twain, we are always willing to "leak information."

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### Astronomy and the Garden.

Somewhere midway between the grotesque superstition of the vulgar and the derisive skepticism of the ultra-scientific, it begins to seem probable that the truth about many things may lie. And so it is here that it may be well for us, as gardeners, to linger awhile, in contemplation of the orb of night. For the folk-lore of all the earth is rich in lunar prognostications; and where folk-lore gives credit, wise men have come to doubt the wisdom of doubting, even though they are unable to offer scientific explanations.

Indeed, it is "quite possible," and perhaps much more; therefore are we not, quite possibly, neglecting rich opportunities by failing to make such study? It would seem that we might be. So, in this belief, we shall offer our readers, during the coming year, encouragement and facility for such study, in the new "Gardener's Calen-

dar" feature, inaugurated in this number of the magazine. Here will be found, month by month, and day by day, the data necessary for planting according to the phases of the moon, and for such other garden operations as are supposed to be under the influence of Diana.

This information is made with the hope that many will be sufficiently interested to keep a record of their gardening operations so timed, and to make reports of these at intervals during the summer, or a complete report at the end of the season, to the editor. In this way we may arrive at valuable conclusions and add something to the sum of useful human knowledge—always a consummation devoutly to be wished. To this end the directions of the "Calendar" will not be simply "bumcombe" reprints, but will be compiled, so far as may be possible, from sources as trustworthy and scientific as exist; and among these, folklore shall have the high place which alone is consistent with its importance.

As with all experimental work, comparative plantings are of course necessary to definite conclusions. Probably the fairest test is a pair of rows always, planted side by side, rather than in two portions of one row. This insures the same soil, moisture and light conditions for those things planted during the favorable, and the indifferent or unfavorable, periods; the two ends of a row very often differ materially in one or two or even all three of these.

Of the moon's influence on the waters of the earth, there is no longer any doubt in any one's mind. That it influences the atmosphere and the gases enveloping our planet similarly with the waters, must be perfectly obvious; and that it exerts a mighty physical pull upon the solid portions as well as upon the fluidic subterranean matter, cannot rationally be denied. Indeed, subterranean tides are accepted by many scientists, if not by science generally. Why should not all this great influence and this tremendously powerful pull—powerful even though it is infinitesimal; it is calculated to be one sixteen-millionth of a given weight—affect vegetation, and indeed all life upon the globe? This is not to say, beyond scientific question of course, that it does—but the question is at least admissible; and the affirmative answer seems, to say the least, the more probable.

When white men first came to this continent, they found the red men here firmly fixed in the belief of the moon's great influence upon crops; and no one has ever questioned the American aborigine's acumen in matters pertaining to the great outdoors generally. And every race of men, everywhere on the globe, cherish these moon beliefs, and are governed accordingly, except as science has shamed and frightened them out of being. And now even science, in the persons of some of its most eminent followers, is willing to admit the possibility of 'a hidden, mysterious bond of a magnetic nature' between the moon and the earth. 'Nothing proves or contradicts such a hypothesis, and it is possible that study in this direction might lead to interesting results.' —House and Garden.

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**A Correction in Auditing Statement.**

In the auditing statement of Mr. H. E. Deats, published last month, the expression, "of the right size," should have read, "on the right side."

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**The Vastness of Nature.**

Nature is so vast and overwhelming that we are bewildered by the very wealth of beauty poured out. We need to study consciously this beauty, to isolate from the multitude of forms, mastering one fragment after another, for the sake of deepening subsequent spontaneous appreciation. — Edward Howard Griggs in "The Philosophy of Art."

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**The Fragrance of the Old Days.**

Oh, the old farm days! How the fragrance of them still lingers in my heart! The spring with its sugar-making and the general awakening about the farm, the returning birds, and the full, lucid trout-streams; the summer with its wild berries, its haying, its cool, fragrant woods; the fall with its nuts, its game, its apple-gathering, its holidays; the winter with its school, its sport on ice and snow, its apple-bins in the cellar, its long nights by the fireside, its voice of fox-hounds on the mountains, its sound of flails in the barn—how much I still dream about these things! — "Our Friend John Burroughs," by Clara Barrus.

# EDITORIAL

**"There is Nothing to Do."**

In a letter appealing for financial aid to provide an appropriate playground for boys and girls, and for young working men and women who have no place for proper recreation, Mrs. Elisabeth Milbank Anderson of Greenwich, Connecticut, makes this astonishing assertion: "Five in every ten children observed out of school in the average city are idle,—doing nothing because, as they say, 'There is nothing to do.'"

This is a tremendously important statement yet it is somewhat incomplete. Fortunate are the city children if they are merely idle. It is better to be idle than to be exemplifying the old-fashioned teaching that "Satan finds some mischief still for idle hands to do." To the writer it seems that to offer nothing but play as a substitute for idleness is not enough. Boys and girls, young working men and young women are more than animals. The exercising of their muscles on swings or on vaulting horses, by playing baseball, or tennis, is not enough. There should in addition be provision for a proper exercise and development of the mental faculties and the control and regulation of the various qualities known as the emotions.

The question might be pertinently asked, Why do five out of ten boys and girls, young men and women do nothing but play or indulge in idle lounging? The answer is truly because "there is nothing to do." It is unfortunate that the training of the modern school has for its greatest tendency the strictly utilitarian and that the tendency is becoming more and more marked. The training of even a quarter of a century ago was different, but it produced results. It is deplorable for these young persons if they have not received some sort of training, some sort of introduction, however meager or imperfect, into modern literature and music. If they are deprived of these mental resources, they are to be pitied. It is even more unfortunate for them if they have not been introduced to the entrancing realm of the great out-of-doors and to the myriads of attractions so freely offered by Mother Nature. Imagine a country boy, if you can, with nothing to do! During his entire school year he looks forward to the vacation when he may get near to Mother Nature. He may not be a "naturalist," but he is a lover of birds and fruits, of fishing and hunting, of tramps over the fields and of the thousand interesting things that surround him. But here comes your city boy. He has played during all the spare time of his school year. For his vacation nothing is left except more play, or idleness, and idleness means work for Satan. When those boys and girls grow up they suffer from a painful lack of mental resource within themselves. Their mind is to them not a kingdom, as it was to the poet. All that they can do is to do something that will pass away the time and here enters the modern, inane, treatment of the unlucky victim. But we are thankful when we observe, as we are beginning to observe, that with sensible men and women these things are becoming things of the past. The modern tendency of back to the country, back to the shore of the "sounding sea," back to a closer walk with nature, shows that men and women are beginning to learn that there is no resource for the idle, no cure for idleness, except the resource and the cure that nature will supply and apply if allowed. It may be garden, estate, pets, anything or everything around a suburban or a country home.

It is unquestionably a good thing to erect fine buildings in the name of Christ, for athletics and games, because there are times in the year when the young men who are members of such associations have "nothing else to do." A Y. M. C. A. building has a good place in the community, but when the physical activities therein are limited to athletics and playing games then those young men are not imitat-

ing Christ Who had quite evidently something else to do besides swinging Indian clubs. He took to the woods and fields in all his spare time. He told us about the birds and flowers and the trees and the vines that He had observed. When a Y. M. C. A. has none of these things to do it is not fully carrying out its mission in the name of the great lover of nature who told us to "consider the lilies of the field, how they grow." Within a gymnasium you cannot watch the growing lilies of the field.

It is a good thing to build elaborate hospitals for the care of consumptives. The writer can speak with authority and deep personal feeling on this subject because his mother died of consumption and he lost a large number of near relatives by that dread disease, tuberculosis. Cod liver oil, swings, vaulting horses and hospitals for the victims of tuberculosis all have their value but all combined are not equal to Mother Nature's sanitorium provided in her realms there is proper interest and activity. Nearly a half a century ago after a farmer had in vain exhausted his entire financial resources on various other members of the family, in the remedies so-called for consumption, a wise doctor told him, "Let that boy take to the woods and keep him interested therein." That is the reason he is here giving you the good advice of going to Mother Nature as a preventive. Thousands of dollars have been given to cure the victims of consumption where a penny has been given to prevent the boy or girl from having it.

It is good, it has been over and over again proved to be good, to get the business man, or the professional man, or the society woman out of the city into a country home. Why not learn wisdom from this and get the boy or girl from the center of Greenwich into the country or among suburban attractions and teaching and influences? Greenwich, it is true, is not a large city, but there are boys and girls within Greenwich as completely isolated from nature as are those around the City Hall of New York City. Why in both places do they play? Because "there is nothing to do." Oh, those five words are ponderous with their load of meaning. Consider them carefully. Much of the future welfare of the nation depends upon your method of handling that significant load of meaning. Why do so many men, weary with the day's labor in the factory, go to the saloon? Because "there is nothing else to do." They know nothing else. They have been taught nothing else. Why are there so many cheap and frivolous pastimes for children? Because "there is nothing else to do." Why so much thoughtless idleness, so much repulsive, perhaps malicious gossip, so many evil occupations? Because "there is nothing else to do." Simply this and nothing more, "Nothing else to do."

But not so are the principles of The Agassiz Asociation. We believe in activity for the entire person, the body as well as the mind, in the play of the woods and the fields, the walk in the meadows, the uplift of flowers and birds, the country home or the suburban cottage, the seeing of things and not only the running after a ball. These should come in to supply the missing link, the tremendously vital missing link that Mrs. Anderson recognizes and deplores when she says because "there is nothing else to do."

---

**The Knowledge He Prizes.**

The college may turn out a linguistic automaton, with mind blank to chemistry, history, economics, and psychology; but the result is too dreadful to contemplate. As it is, the scientific training of most of us poor bachelors of art is desultory and picayune. The only science that I was taught was a little biology and geology; but slender as is that knowledge, I cling to it with great affection. The broadening effect of even one science is incalculable. When I compare the glorious vistas that historic geology laid open before my very soul with Plato's story of the death of Socrates—and there is nothing finer in Greek literature—I stand unhesitatingly by the geology. A tribolite is preferable to a second aorist. He, at any rate, is animate. And to think that had it not been for the pornographic plays of Terence, some knowledge of astronomy or botany might have been mine!—Walter Phelps Hall in "Why I have a Bad Education," in "The Outlook."

# THE AGASSIZ ASSOCIATION

Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

## Our Meriden High School Chapter.

[Held over from last issue.]

This Chapter does things in the right way. We are pleased by their success. It seems difficult to get some persons to recognize the fact that there is a difference between AA work and that of the regular class room science work. We are not to duplicate class room science, but to supplement it.



THE CHAPTER HAS ITS OWN ROOM.

This Chapter under the excellent leadership of Miss Caroline J. Hitchcock has entered into the right spirit of work supplementary to the regular science work of a high school. The leader writes, "Each member has been expected to specialize. The committee have urged this and have given advice on the choice of subject for study." That is the true keynote to the situation. A class works together, an AA Chapter works individually; the AA Chapter stimulates individual specialization.

E. Gardner, Chairman of the Museum Committee of our Meriden Chapter, gives an extended report of what has been done in arranging the laboratory and describes in detail the various collections that have been added. He shows that the museum has grown rapidly in the past year. He also tells what he has done individually in the study of trees.

E. Norma Doolittle investigated moths and butterflies and then turned her attention to trees. She relates interesting experiences also in studying porpoises and her unsuccessful attempts to photograph them. The report shows that she has her eyes in readiness for all nature because she mentions many things of interest.

Anita E. Balzer has carefully studied the spring flowers of New England and collected thirty-five kinds. She tells how she mounted them. Then her work was contributed to the Chapter. She had six varieties of blue violet. She also reports regarding photography.

Sara A. Elmendorf has done extended work on seaweeds and makes an interesting report telling how she studied the fine branching by the aid of a lens. She notes the colors and characteristics and has learned most of the scientific names.

Doris Parker has carefully studied the birds, noting especially their colors.

Elma Risley McLean has devoted attention to the mosses and pressed and mounted several different kinds in their sporophyte state. She has studied the structure and made drawings of the archegonium. She intends to continue the study this spring, and also to note some of the common ferns. She has raised a brood of caterpillars and "found it far more interesting than reading about them,' and states that

she "learned much from watching them spin their cocoons."

Adelaide M. Piechocki found cocoons in the winter and watched their transformation. She writes, "I showed them to several people who had never seen a cocoon nor a moth so closely, and they watched them for hours." She obtained moth eggs and hatched them out and states that the little caterpillars "were very small and as black as coal," and that "it was very easy to care for these caterpillars for they eat a variety of leaves such as those of the grape, gooseberry, maple, wild cherry, willow, lilac, etc." She gives further details, and tells of her methods of continuing this study.

Miss Hitchcock, the leader of the Chapter, makes her individual report as follows:

"I have continued work in my chosen subject by setting out young trees, both pines and broad leaf, in the old pasture that I am trying to reforest. About five hundred trees were set out. Seeds were planted also in the seed bed and it is expected that there will be several hundred more seedlings ready for transplanting this spring. I have learned to identify a few new trees and taken a few pictures of trees. Besides this I have attended most of the meetings of the Chapter and served as an officer."

* * * *

It is evident that the Chapter continues its meetings even if the leader is not present. The trouble with the study of nature is that too many people fail to take the initiative They will study when somebody leads the way and only then. The real joy of doing is to do as Agassiz did, engage in original research, then simplify that knowledge and make it known in your own individual way to others. See the thing and tell it to others. Because the members of this Meriden Chapter have done this in the AA method, we strongly commend them as an example to be emulated by other groups of young people. Whatever is worth doing at all is worth doing well.

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We are prone to hitch our wagon to a star in a way, or in a spirit, that does not sanctify the wagon, but debases the star.—"Our Friend John Burroughs," by Clara Barrus.

### A Fiendish Plant.

New York City.

To the Editor:

I am sending you the seed pod of a queer Persian plant that I obtained on my last trip to that country. This pod I brought with me specially for you and the readers of THE GUIDE TO NATURE.

The capsule not only looks terribly forbidding but is as murderous in its actions as in its appearance. No rain falls on the mountain plateaus of Persia during the whole summer. Vegetation is luxurious in the spring when water in abundance runs down to the plains from the snow covered mountain chains and ridges, but a merciless sun and a dry desert atmosphere soon evaporate the moisture that is not carefully stored by artificial means, and all plant life withers and dies, except desert thorns and some species of thistles.



"AS MURDEROUS IN ITS ACTIONS AS IN ITS APPEARANCE."

During the spring the fat-tailed sheep and the camels enormously increase the fatty deposit in tail and hump, the bees in two months' time store up honey enough for the rest of the year, and all nature seems to labor over time.

When the spring luxuriance of verdure is passing our fiendish plant gets in its deadly work. The fully developed seed pods, hidden under the withering foliage of brown and yellow leaves, fasten their tiger-like claws in the nostrils of a grazing camel, a wild ass, an antelope or a sheep; the animal tries to rid itself of the sharp prongs by rubbing, but the more it rubs the deeper it forces the claw-like tentacles into its tender, tortured skin. Inflammation of the entire throat in many cases follows, and the poor animal, unable to eat or drink, succumbs. That appears to have been the object of this fiendish plant, for it seems that only in the rich fertilizer of a decaying victim can it find enough nourishment for its numerous offspring that sprout from the hundreds of black seeds contained in the great, belly-like capsule. This is what the drivers of my caravan told me, and they hold the plant in fearsome awe, giving it many a bad name in their native tongue, such as rheitan—no bana—devil's flower, the killer. The herds of breeding camels are left on the grazing grounds in a semi-wild condition under the care of one or two shepherds, and wander over many miles to find subsistence. We may thus understand the danger to which this queer vegetable enemy exposes the unfortunate quadrupeds.

JOHN C. UHRLAUB.

### Success in an Important Work.

The real lover of nature knows that the important thing is not so much how to know one flower or bird from another; the point of supreme importance is *how to love nature.*

I was not aware that you were attempting to issue a monthly of the comprehensiveness of THE GUIDE TO NATURE until it was recently called to my attention. I wish to congratulate you on your evident success, and dare say that you have had uphill work with the magazine, as the times have been so very unfavorable to many lines of business during the six years since you started the magazine. You and all who have helped in any way to make it a success certainly deserve credit.—Harry Edward Miller, White Plains, New York.

### Omitted for One Number.

We regret that we were obliged to hold over the interesting "Birds in the Bush" department by Edmund J. Sawyer. This will appear in our next number with some special features.

### DOGWOOD.

**Down through the sunlit ether**
**Some clouds have drifted low,**
**And are trailing through the woodlands**
**The whiteness of the snow.**

**—Emma Peirce**



"THE WHITENESS OF THE SNOW."



"ARE TRAILING THROUGH THE WOODLANDS."

### A Subscriber or a Member?

It costs a dollar a year for subscription to THE GUIDE TO NATURE and fifty cents additional per year, exclusive of entrance fee, etc., for Corresponding Membership in The Agassiz Association. As we give information free to any of our subscribers with practically the same readiness and fullness of detail as we would to any of our members, our friends often ask the question, "What is the advantage of being a member?" It seems, on the face of it, a natural question, Why a dollar and a half should be paid, when all the advantages can be secured by a subscription to the magazine, and practically all the advantages of membership can be secured for a dollar.

When THE GUIDE TO NATURE was started, we hoped to make the membership free, and placed the subscription price for the first year at a dollar and a half. But we found that those that are eligible to membership and felt real interest were willing to expend the dollar and a half, and even more, if necessary, to pay the expenses of the magazine. In other words, we found many that were enthusiastic and many that were only about halfway interested, or could not afford to pay more than a dollar. To lead those that were only slightly interested into a deeper interest, and to reach those that could not afford to pay more than a dollar, it was decided at the end of the first year to reduce the subscription price to one dollar a year, and to make the annual dues of the Corresponding Membership a dollar and a half. The one dollar does not pay expenses. These have to be made up by the advertisers, by our membership fees and by contributions. If this were a business for pecuniary profit there would be no inducement for any one to pay a dollar and a half for what he can obtain for a dollar.

But it is not a business. It is an Association for doing missionary work in the realms of nature, to create and increase a knowledge and love of nature. It is for exactly that that we are here, and the simple answer to the question, Will you be a subscriber or a member?, is, Will you help to pay what the thing costs or leave it for some one else to pay?

### Every Chapter Member should be a Subscriber.

Here is an excellent suggestion from Professor Ralph Benton, Field Secretary of The Agassiz Association for the State of California. He writes as follows:

"We are suggesting that the *local* initiation fee of members at time of organization and as new members come in, be made large enough not only to cover the incidental expenses of organization, but to include a personal six months' 'trial' subscription to THE GUIDE TO NATURE. My idea is briefly that one of the best ways to instruct members in the work of the AA and to develop an 'esprit-de-corps' is to read THE GUIDE TO NATURE. The Chapter copy goes to the President or to the Chapter library and is theoretically read by all, but practically read only by the few that as measured by interest need it least. A six months' subscription would have its influence. Many would miss it then and continue their personal subscription. The others would at least be a little more likely to consult the library copy."

A member of a Chapter is a member of The Agassiz Association and so far as taking THE GUIDE TO NATURE is concerned there should be no distinction between a Chapter member and one that enrolls direct. Every direct member is required to take THE GUIDE TO NATURE. Surely the members of a Chapter because they work together with others are to be expected to take as definite an interest in our work as that taken by members that enroll individually. Membership in The Agassiz Association stands for something definite. It is not a form, it is not a farce. It means definite, direct work in nature and an endeavor to interest others in nature. We find, as Professor Benton says, that individual members retain and increase their interest, but Chapter members often do not. This we believe is largely due to the fact that some of the Chapter members are not in touch with our work as described in THE GUIDE TO NATURE. We are, therefore, asking the officers of every Chapter of The Agassiz Association to see that every Chapter member is enrolled as a subscriber.

Special terms to newly initiated Chapters: a trial subscription for six months for twenty-five (25) cents.

# A MAN THAT GOT MAD

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THE GUIDE TO NATURE

came last week from a distant city to visit ArcAdiA, because, he said, he had reached a new point of view by reading

"The Spirit of Nature Study"

by Edward F. Bigelow

He said that the book made many things clear to him, and gave him a clearer understanding of several phases of nature study, and of the meaning of this magazine. Perhaps the visit also aided. You can get the book postpaid for One Dollar, and visit ArcAdiA free.

Cordially,

THE AGASSIZ ASSOCIATION

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# LITERARY AND BIOGRAPHICAL

**MAY.**

A host of blooms proud Nature grooms,
In shady dells and sunny rooms;
Gay insects hum in perfumed air,
And lovers dream in meadows fair,
Of happy homes—a future state—
Where robins nest and songbirds mate;
Thus May-day clears for all the years,
The earth of grievous sobbing tears.
—Robert Sparks Walker.

**JUNE.**

"From tears immune," chants cheerful June,
All Nature echoes back the tune;
With roses, brides and songsters rife,
A sunny ray in every life;
Where orchards groan with heavy loads,
There fireflies dodge big hopping toads;
And spiders hug and black ants tug
A cutworm ill and stubborn bug.
—Robert Sparks Walker.

**How to Use The Microscope.** By Reverend Charles A. Hall. Containing 20 Full Pages of Illustrations from Photo-micrographs and 25 Line Drawings in the Text. London: Adam and Charles Black.

This is a book for the novice and contains a few suggestions and some illustrations of interest to even the most experienced. We frequently receive inquiries from beginners with the microscope, and cordially recommend this as having much merit.

**Field-Days in California.** By Bradford Torrey. Boston: Houghton Mifflin Company. Price: $1.50 net.

From the Publisher's Note:

"Bradford Torrey died at Santa Barbara, California, October 7, 1912, two days before his sixty-ninth birthday. He had sent this book to the Publishers some weeks before, but had not had an opportunity to read the proof. The manuscript had been prepared, however, with that scrupulous care which he always exercised in his literary work, and there is no reason to suppose that he would have made any important alterations, even in detail, if he had lived to see it through the press.

"The Publishers have sought to give the volume something of a memorial character by providing a portrait of the Author and illustrations from photographs of localities treated in the book, in two of which Mr. Torrey himself appears."

The book contains many instructive chapters chiefly devoted to observations of birds. One illustration is particularly interesting. It shows Bradford Torrey sitting under a tree in the foreground and looking across a beautiful valley. His thoughts, too, seem to be beautiful.

**The Threshold of Science Series.** Zoology. By Professor E. Brucker. Garden City, New York: Doubleday, Page & Company.

This is a popular manual of animal life from the lowest forms to man. It is written for the average man who has no scientific training and wants to know in plain, understandable language the explanations and causes of natural facts.

**Wild Life across the World.** Written and Illustrated by Cherry Kearton. Introduction by Theodore Roosevelt. New York City: Hodder and Stoughton.

Mr. Kearton and his brother are known the world over as remarkable photographers and accomplished students of nature. The author of this book has done excellent work in Africa, and has received the highest commendation from President Roosevelt who met him there. The work possesses genuine scientific value and is entrancingly interesting. It appeals to a wide range of nature interests—hunting, photography, biology. The illustrations are remarkably good. One feels in reading the book that here is an original manual, not a compilation, from the hand of a master in the study of nature.

**The Flower-Finder.** By George Lincoln Walton, M. D. Philadelphia: J. B. Lippincott Company.

I differ with the author in what he says in the first sentence of his preface: "The study of wild flowers offers an unrivalled diversion for one who, in retirement from active work, feels the need of something to replace the interests which have hitherto absorbed him." Why should the study of wild flowers be left as a diversion upon retirement from active work? There is nothing better on earth than an interest in nature. Far better is it than many of the forms, too numerous to mention, of diversions from active work of the present day. But he goes on to state: "It is well for the plodder, in danger of going stale from too protracted toil, to improve such opportunities as offer for the broadening of his horizon before it is too late." I would not restrict it to the plodder, but would urge all people to seek rest, refreshment and uplift in nature. But my thought is one of pleasantry rather than of criticism. I can seriously speak only good things about the book, the contents of which are attractive. It is well arranged, and convenient. The publishers have done their part well.

# The Guide to Nature

JULY, 1914.



"Land where my fathers died! I love thy rocks and rills, Thy woods and templed hills; My heart with rapture thrills Like that above. From every mountain side Let freedom ring!

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## WINGED VICTORY

BY VICTOR WHITLOCK

O PATIENT, wounded warrior of the range,
Braving the might of all the storms that blow,
Breasting the bandit winds that never change,
Fighting forever with an unseen foe.
How your brave spirit breathes of sturdy cheer—
You that the ranger dēems a worthless tree.
Triumphant Nature, sculptor without peer,
Has moulded you her Wingèd Victory

### Not Conquered by The Winds.

New York City.

To the Editor:

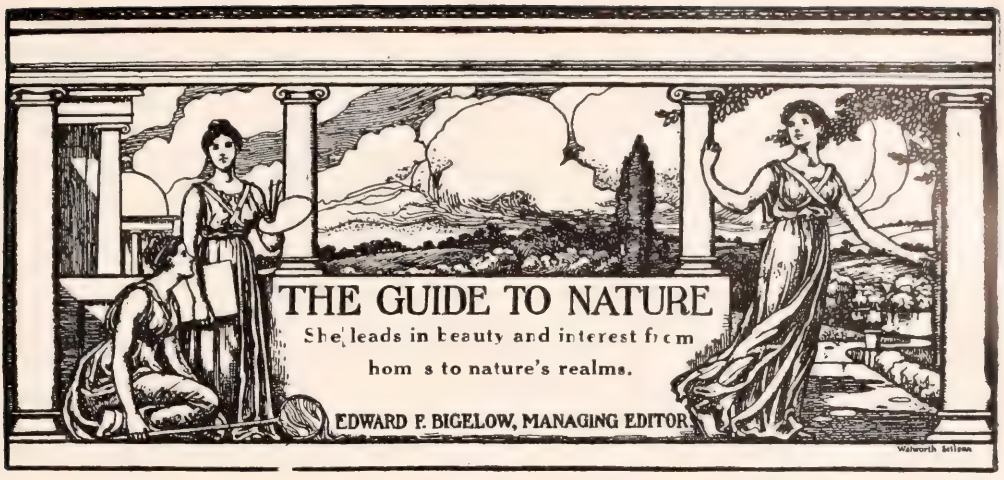
This old tree is one of three or four wind blown specimens which Mr. Gardner Hazen and I discovered last summer while riding over the Snowy Range of the Medicine Bow Mountains in western Wyoming.

Yours very truly,

VICTOR WHITLOCK.



CRANDALL—THE FARMER-POET, STAMFORD, CONNECTICUT.




Published monthly by The Agassiz Association, ArcAdiA: Sound Beach, Connecticut

Subscription, $1.00 a year  Single copy, 10 cents

Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1879

Volume VII  Guidance for **JULY.** Publication for June.  Number 2

# Crandall—The Farmer-Poet.

**BY EDWARD F. BIGELOW, ArcAdiA: Sound Beach, Conn.**

EVERY farmer should be a poet. Every farmer to a certain extent is a poet, although he may not realize the fact. With many that extent is limited. It is a question of degree, but any one that loves nature sufficiently well to abandon the crowded haunts of man for the seclusion of a farm in the distant country, there to deal directly with Mother Nature, has in his heart the germ at least of the true poetic instinct. This, to a limited degree, is true of any occupation in life. There is poetry in every form of activity, as there is in every spoken word, although one must sometimes search long and faithfully to find it. One may be a poet without writing poetry. Few have the power of poetical expression, but every man that likes to live with the trees and the birds and that likes to plow, likes to see the sun rise, and likes to drive the cows to pasture, is a poet. So is he that takes shellfish out of the sea, or pounds iron on the anvil, or sells ribbon or pills or harrows. It is doubtful if there can be found in all the world a human being so sordid, so utterly utilitarian as not sometimes to have uplifting thoughts, some appreciation of the beauty of living and of acting and struggling faithfully in life's contests. This is a world of specialization. Comparatively few supply the things that everybody uses. This is as true of poetry as of everything else. We all may speak poetry and live poetry, but it remains for the specialist in versification and in rhythm to put into transmittible shape the thoughts that are common to humanity. If there were no users of plows and pills and ribbons, plows, pills and ribbons would not be supplied. If there were no lovers of nature this magazine would not be needed. If there were no people that desire to know about other people's doings and the events in human progress, newspapers would not be needed. Editors and publishers are comparatively few although everybody likes to read the newspapers. Although everybody directly or indirectly depends upon the blacksmith, comparatively few stand by the glowing forge. Such thoughts were in my mind as I made an appointment to go northward from Stamford to visit Idylland. It was a journey to the home of one that not only lives amid beautiful surroundings, that knows the delight of chop-

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HE IS "THE HAPPY FARMER."
"My sturdy team goes swiftly round
And swiftly turns the fragrant ground."

ping wood, of holding the plow, and of seeing green things grow, but one that can in well written lines transmit some of that joy to others. Mr. Charles H. Crandall is a poet pre-eminently of the farm, though he has written upon other topics. To him the field, the forest, the sky and the streams, mean more than the place in which he raises his crops, gathers nuts or hews firewood, although he is engaged in all these interesting occupations as well as in other diversified pursuits characteristic of the New England farm. He lives near to nature. I wish that I could write in glowing terms of his interest in nature study, but I cannot. I wish that he were a naturalist, but strictly speaking he is not. He is a farmer and farmer-poet; he appreciates the delights of his occupation, he transmits his pleasure in it to humanity, and he interests humanity in it, but for the details of nature, as the naturalist sees them, he has no special affection. I doubt if, when he looks at a pine tree or an oak tree or an apple



"You'd like to hold the plow awhile?
All right, sir. I am willin'."
—From "Plowing."

tree, he can describe any of the details of xylem, phloem, of cambium layer, or of stomata, but he does see in the pine tree, the oak tree and the apple tree, something perhaps more important. He sees human life exemplified and he sees various kinds of people with their characteristics and diversified occupations symbolized by the trees. It is for the farmer to be strong like the oak. It is for the pine to seem graceful and cultured and refined, but it is for the apple tree to scatter fruit for all the people. When Mr. Crandall looks at those trees he writes not of their scientific structure, nor of their physiological functions, but of what they mean to humanity. Witness his poem, "Three Trees."

### Three Trees.

The pine-tree grew in the wood—
  Tapering straight and high;
Stately and proud it stood,
  Dark-green against the sky,
Crowded so close it sought the blue
And ever upward it reached and grew.

The oak-tree stood in the field,
  Beneath it dozed the herds;
It gave to the mower a shield,
  It gave a home to the birds.
Sturdy and broad, it watched the farms—
Its knotted boughs like the mower's arms.

The apple-tree grew by the wall—
  Ugly and crooked and black;
But it heard the gardener's call
  And the children rode on its back.
It donned in the Spring a sweet, white cap,
And dropped its treasures in Autumn's lap.

"Now, hey," said the pine, for the wood!
  "Come, live with the forest band.
My comrades will do you good,
  And tall and straight you will stand."
So he mocked the wind with merry shout
And threw his cones like coin about.

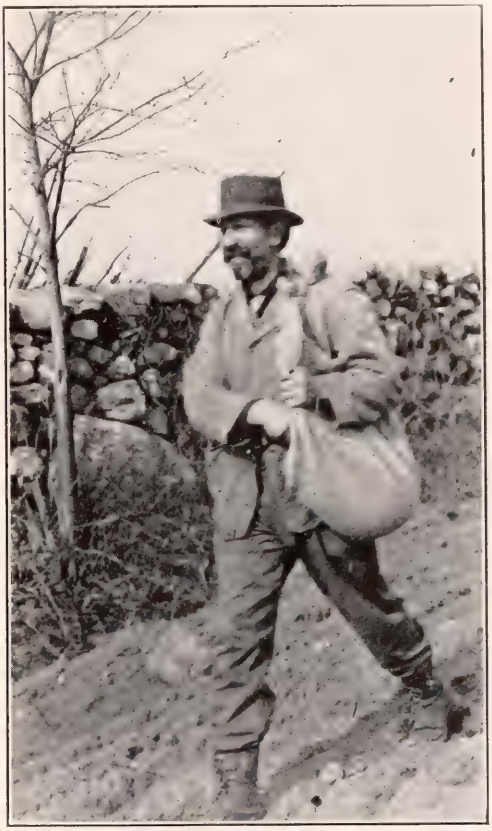
Oh, oh," laughed the sturdy oak,
  "The life of the field for me!
I challenge the lightning stroke,
  My branches are broad and free.
Grow tall and slim in the wood if you will.
Give me the sun and a wind-swept hill."

And the apple-tree murmured low:
  "I am neither straight nor strong;
Crooked my back doth grow
  With bearing its burdens long."
But it dropped its fruit as it dropped a tear,
And reddened the ground with goodly cheer.

And the Lord of the Harvest heard,
  And He said: "I have need for all,
For the bough that shelters a bird,
  For the beam that pillars a hall;
And grow they straight, or grow they ill,
They grow but to wait their Master's will."

So a ship of the oak was sent
  Far over the waters blue;
And the pine was the mast that bent
  As over the waves it flew;
And the ruddy-fruit of the apple-tree
Was sent to a starving isle of the sea.

Now the farmer is strong like the oak,
  And the townsman is proud and tall,
And city and field are full of folk,
  But the Lord has need of all;
And who will be like the apple-tree
That fed the starving isle of the sea?



HE CAN SOW OATS AS WELL AS THE SEEDS OF BEAUTIFUL THOUGHTS.

When Mr. Crandall early in the morning goes forth to his field, he never stops to pick a bit of moss from the wayside to examine it with the microscope. He looks toward the rising sun and hears the robin's call, and to him they say, "Go to work." He sees the plow motionless in the furrow, the glowing colors of the morning sky, he hears the music of the falling meadow bars, and they all speak to him of happiness. He thinks of the day's work. The swift flight of the birds tells him that he too must be busy until the twilight falls, when



"My steeds go stepping down the lane.
How glad they reach the water-trough!"

again the meadow bars shall fall as the cows come home from the pasture. What glorious music it is to him! How different from the flight of the birds, for hearing some one say, "Come, Love, there is no more work to do." Such are the thoughts that arise in his soul, and urge him onward toward the day's duties, and enable him to appreciate the rest that will follow. It is his peculiar talent to transmit that feeling for the day's work and the night's rest, to thousands that toil in the fields. Where is the farmer that will not appreciate his poem that he calls "The Happy Farmer?"

### The Happy Farmer.

O'er mountain peaks the morning breaks,
The robin at my window wakes,
And calls me now to guide the plow
Down where the waving willows bow.
My sturdy team goes swiftly round
And swiftly turns the fragrant ground,
While breezes blow and grasses grow,
And birds of passage northward go.
  Fly on, swift birds, across the land!
  And blow, ye winds, from strand to strand!
  For well I know, where'er ye go,
  Ye see no happier man below,
  For my heart is light and my love is true,
  And the day is full of work to do!

The plow is still and blushes fill
The heavens o'er the western hill,
As homeward now, with tossing mane,
My steeds go stepping down the lane.
How glad they reach the water-trough!
And grateful now, with harness off,
They follow to the pasture ground,
And break away with playful bound.

Now softly fall the meadow bars,
And silently steal out the stars,
And as I watch the splendid night
I hear a footstep falling light,
And some one saying, sweet and true,
"Come, love, there's no more work to do!"

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Speaking of the farmer's rest will remind those that have toiled with the plow or with the scythe, of the strenuous life that the farmer leads. It is everyday toil, delightful toil, it is true, but despite the fancies of the poet, and the alluring misrepresentations of the people so enthusiastic over the enchantments of the soil, it still remains toil, nothing but toil if one can see in it only the toil. But to the farmer the toil itself is a joy. He would not desert his occupation for the frivolities and artificialities of the city, but he does appreciate the rest that comes at the end of his honest labor. How different is an active city man's rest from that of the farmer! Ten hours, twelve hours in his city office; the work drives him. When his time for rest arrives, he dashes away in his automobile, and with his family goes whirring through the country with the same rush, the same dash, the same spirit that have inspired him all day long in that city office. But that is no rest for the farmer. He thinks of the fisherman as enjoying the ideal rest. As he plods in the furrow behind the plow, or swings the scythe in the scorching field, he thinks.

"Could I but sit in the rear of a boat on a placid sea and fish, and fish, and fish, even if I never caught a fish!" As he swings the axe and thinks of the fisherman that pulls the oars, he says, "Could I but stop for a time this swinging as he can stop that pulling!" And there you will discover the germ of one of the finest poems that Mr. Crandall ever wrote, "Lean on Your Oars and Rest Awhile."

**Lean on Your Oars and Rest Awhile.**

Lean on your oars and rest awhile—
  This is the sweetest part of the stream—
Shadowy branches over the aisle
  Lure us to linger, list, and dream.
While the wings in the verdure gleam,
  Dream and drift the rest of the mile;
Under the thrushes, over the bream,
  Lean on your oars and rest awhile.

Think of the old days under the trees—
  All the murmurs and music of May—
And mating robins and booming bees,
  The big blue roof all over the day.
Oh, it is well to go back and think
  Of the dear mother, and see her smile
The old sweet way, the while you drink
  Deep of her love, and rest awhile.

For while you lie and drift and rest—
  This, the sweetest part of the stream—
Faces of all you have loved the best
  Softly shall move within your dream.
Life is—to love; and loving is life;
  Dropping the world and its petty guile,
Learn the lesson, and, far from strife,
  Lie on your oars and rest awhile.

C. H. C.

When the day is done, the farmer takes his pipe and under the shade of the trees he thinks and thinks of the former days under the trees, when as a boy, he played amid the murmur of the leaves, the music of May, and heard half unconsciously the robins' song and the gentle murmur of the homing bees. The remembrance of these comes now like the loving caresses of a mother gone long ago. Then his mind wanders to those days when, as a farmer boy, he looked toward the time when he might go fishing, when the toil of stirring hay should give place to the drifting of a boat. That skiff floats on the sweetest part of life's stream. There he leans on his oars, and rests awhile.

A lady recently came to ARCADIA and said that she wanted to study the birds. She had come from a distant state, because she had heard that the ornithology of this part of Connecticut is rich and varied, having both shore birds and land birds in great numbers. She wanted to add to her list. She had "checked up" one hundred and thirty-five in the previous year. "Done what?" I said. "Checked up," she repeated, "don't you know what that means?" Yes, alas! I do. It means that the birds meant little to you if checking up is the whole



THE PRACTICAL POETRY OF MOWING



HE SUPPLIES FIREWOOD FOR FIREPLACES.

thing. Being required to learn the names and so as to identify a dozen trees, does not mean much, alas! not much. But to have a tree give you new life when you are tired of the foolishness of the metropolis, tired of the pavement, then the tree will mean something to you. Not a matter of identification, not a matter even of learning scientific details. One partridge that sits watching you unafraid means more than "a hundred and thirty-five that you have checked up." When I walked through the ravine with Mr. Crandall, a commonplace chewink called and Mr. Crandall asked me, "What is the name of that bird?" He saw the spring flowers in bloom and the common saxifrage, and wanted to know the names. Our farmer-poet has gone deeper than names and "checking up." The things of the forest have meant more to him. Over the green leaf on the tree top he has soared to distant stars and nebulae. To learn more than their names "he questioned the universe," and the answer brought him, not mere knowledge and pastime, but help and trust and joy. We commend to our readers his delightful poem, "The Forest Cure."



SUPPLYING FUEL FOR FIRESIDES WHERE HIS POEMS ARE READ.

## The Forest Cure.

A-weary of burrowing,
  Tired of the town,
The shadows of palaces
  Weighted me down;
The smell of the gutters
  Slow-poisoned my breath,
Each wheel on the pavement,
  Seemed coupled to Death.

I questioned the universe,
  Begged for a clue;
"Up, up," spoke the green world,
  And "Hope," said the blue.
"Take time as I take it,"
  The gray boulder spoke,
And "wait," said the acorn,
  And "trust," said the oak.



"The partridge sat watching,
And called, unafraid."

I stole to the forest—
  I silently prayed—
The partridge sat watching,
  And called, unafraid.
The vestals of Springtime
  Went tip-toeing by;
'Twas birthtime in Nature—
  But soft as a sigh.

Green leaf on the treetop—
  Brown leaf in its bed—
One, glad it was living—
  One, glad it was dead!
"Grow," whispered the rootlet;
  "Smile," echoed the flower;
"Joy," rippled the brooklet,
  "If only an hour."

But here near his home where everybody knows him and loves his verses, how vain it is for me even to attempt to analyze Charles H. Crandall's poetry. It is poetry, not to be dissected but to be left as nature is to him around his home. He has seen and described the beauty of the commonplace. Our readers will recollect that several months ago a potato in the form of a heart came to this office. It was sent by a kind friend who had welcomed it as an emblem of a heart hidden in the bosom of Mother Earth. In that conventionalized form it represented the fruition of a new life, a resurrection of a life that had vanished. Most of us would have seen only an oddly formed potato. Farmer Crandall looked beyond the mere vegetable to the thought and uplift and encouragement that that odd form inspired. Here is what he saw:

### "Heart's Love Remains."

BY CHARLES H. CRANDALL, IDYLLAND, STAMFORD, CONNECTICUT.

We buried a Heart in the mother mold,
A Heart that was silent, still and cold,
And we went about in our saddened round,
Trying to smile as we tilled the ground,



THE POTATO IN HEART FORM.
"As out of the soil we lift this sign."

Dropping the seed in the fruitful earth,
Praying, with faith, for the timely birth
Of flower and fruitage to greet our eyes—
But Oh, that Heart we buried with sighs!
Of the flower and harvest we feel so sure!
But what of that Heart? Shall it endure?

Blade and leaf and blossom have come,
Frost the garden will soon benumb,
Faith is faltering, promises weak;
But still the earth has a word to speak.
As out of the soil we lift this sign—
Life, like all life, ever divine—
Lowly type of immortal kind,
Bringing the promise again to mind:
"Hearts may be dust, hearts' loves remain;
Hearts' love shall greet us yet again."

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Mr. Crandall is successful as a farmer. He "tickles the earth with a hoe and it laughs with a harvest" for him. The earth gives him a good living, in the popular phrase. But in his poetry of life, he has raised a greater and better harvest, and for a greater number of consumers. He tries to keep people young. The following words of encouragement are taken as a salutation from the preface to his book of poems. Let us that love nature poetically as well as scientifically, listen to them as to a benediction.

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"If you are one who would not sell, at a price, the poetry of life; if you love a stroll over the autumn hills at chestnut-time; if you enjoy buffeting a winter storm; if you have the heart of the boy or girl that thrills with joy at the sight of the first violets, or the sound of the first blue birds, I am sure we shall agree to drop all books whenever we are hungry for Natures own poetry of the great Out-of-Doors.

But when the mood comes for a book and a cosy nook by the fire-place, then if you should grant a hearing to my lines, and find entertainment, I fancy my own fire will glow the brighter—and I shall say to myself: 'Some one is reading "Songs from Sky Meadows."'"

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### A Biographical Sketch.

Greenwich, New York, a beautiful village among the hills of Washington County, a region of lovely lakes and rushing rivers, was the birthplace of Charles H. Crandall. It was in 1858, but the child never forgot many impressions of the Civil War period. Education was first sought in a typical red country schoolhouse. A few years of graded schools in Greenwich and Brooklyn, and the boy was passed on to mercantile life in New York, and subsequently to five years active service on "The New York Tribune," in reporter's, correspondent's and editorial positions. This experience Mr. Crandall calls his university education. Besides

his work on the "Tribune," Mr. Crandall has contributed poems, prose sketches of rural life and nature to the "Century," "Harper's," "Atlantic Monthly," "Outlook," "Independent," "Critic," "Lippincott's," "North American Review," "Outing," and many other periodicals. His books comprise "Representative Sonnets by American Poets" (Houghton Mifflin & Company), "Wayside Music," "The Chords of Life," and "Songs from Sky Meadows," the latter embodying a name that he gave to a hilltop farm at North Stamford, now owned by Henry Miller, the actor. Mr. Crandall was once tendered an editorial position on the "Century" magazine, but he decided against it, owing to the necessary confinement to a desk. Indeed he was forced to the country in 1886 to conserve his health. To a lover of nature the strenuous life of a farmer has its silver lining, and meanwhile the farmer author has found time to labor a lot for town betterment in many lines. He thinks the poem, "Lincoln," read before the Stamford Historical Society last winter, may be the best thing he ever wrote though he has a liking for "The Faith of the Trees," "Stamford Highlands" and many shorter lyrics in which he has aimed at the unattainable perfection in "what is not only genius but art." Many of Mr. Crandall's poems have been put in anthologies, and not a few set to music, while his gift has been recognized by critics like Stedman, Van Dyke and Gilder. His rooms are adorned with framed illustrations of his poems taken from many magazines, and to these he confesses he repairs when he gets discouraged, as we all do. That his hundreds of poems have reached many millions of readers is a pleasant thought for him and his friends.

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Nature-studies have long been valued as a "means of grace," because they arouse the enthusiasm, the love of work, which belongs to open-eyed youth. The child bored with moral precepts and irregular conjugations turns with delight to the unrolling of ferns and the song of birds.—David Starr Jordan in "The Stability of Truth."

## The Talk of the Hills.

THE GREAT HILLS SPEAK THE UNIVERSAL LANGUAGE.

It is impossible to talk with the mountains and not grow wiser. There is a certain breadth in their wisdom that moves one to charity and mercy. I have never seen the mountains petulant, angry, spiteful. I have seen petulant storms sweep down on the mountains, spiteful, frightful. But the shoulders and brows of the mountains rebuked the snarling storms and seemed to say even to the thunder, "Be still, little creatures. We prefer the sunbeams." And they took the sunbeams to wrap around themselves like a garment, while the storm fled away. One always looks to the mountain tops to know if the rain is really passing.

The mountains speak the one universal language. My friend, who often goes to China, tells me that frequently he has looked upon a row of hills and while he gazed was not conscious that he was away from America. How absurd seems the imaginary line that crosses the Rockies out West. And these are our Rockies and those are the Canadian Rockies. If you talk with them as to their allegiance they laugh at you. They are the Rockies of all nations.

When night shuts down, the mountains disappear. It is impossible to see them very far. The voices also fade away. Often I have stood talking with a mountain as the sun went slowly down, and it has said, "Good-night. Go sleep and forget, little man. Do you not see how we are taking your sun away? No more communing tonight. No more planning, fearing, hoping. Rest now. Behold us, the everlasting hills, as we do bow ourselves and stretch ourselves as upon a couch. The day is done and now repose."

And often, when one cannot sleep for fear as from fatigue, he can think on what the silent mountains are doing till the fretful fever passes and he sleeps.—By Emory J. Haynes. A quotation from an extended newspaper clipping sent to The Agassiz Association by one of its best friends.

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I like the magazine very much for use in nature study classes as well as for its general interest.—L. D. Wooster, Department of Biology, Western State Normal School, Hays, Kansas.

## The Uplift and Resources of an Interest in Nature.

GRADUATION ESSAY BY PEARL AGNES BIGELOW, SOUND BEACH, CONNECTICUT, AT THE GREENWICH HIGH SCHOOL.

By the use of the word "uplift" in nature I do not intend to tell of some marvelous method of commercial importance which will enable you suddenly to become wealthy, nor, when I speak of the resources of nature, do I advise everyone to go immediately to farming, which appears to be the popular mode of seeking nature. I do not believe in advocating a general emigration of all sorts and conditions of people to the country for an occupation, since, in the first place, everyone is not adapted by talent or education straightway to become a successful farmer, any more than everyone can become at a moment's notice a successful lawyer. In the second place, civilization requires merchants, physicians, lumbermen, miners and scores of others, as well as farmers, though it is often incorrectly asserted that the country is wholly dependent upon the agriculturist. However, to return to the original point, I mean by the term "uplift" gained from nature, a widening of the intellectual and spiritual horizon and a development of the aesthetic taste by going to nature for refreshment and recreation.

The first essential point is to establish the true relation with nature herself. To gain that true relation, which is one of love and sympathy, one does not have to be intimately acquainted with all the natural sciences—although such knowledge is oftentimes valuable—because the views of a natural scientist are not necessarily those of a nature lover. One might have a profound and systematized knowledge of the laws of ornithology, botany or entomology and yet not have a real sympathy with birds, plants and insects. A person who searches for a frog that croaks English, or a rabbit that dances the bunny hug, is as far from holding a true relationship with nature, as possible for he is looking for the abnormal and not the natural object. Neither can the person who is interested in only one small phase of nature be said to have found the real connection with her, who is so complex. A collector may or may not have established a true and enduring friendship with Mother Nature. He may feel only the joy of possession on account of his stuffed and labeled specimens, and not realize in the least degree the silent but great companionship with the outdoor world about him. As well might we call every stamp collector a postmaster because they both deal with postage stamps, as to call every collector of natural specimens a lover of nature, though there is a possibility of being both, at one and the same time. When a business man buys a country estate and lives there participating in exactly the same recreations as he would in the city, he is not living the real country life but has merely imported the city into the country. Consequently he cannot gain the proper benefit from his country home, unless he makes in his life an appreciable change from his city life. This can be best effected by going directly to nature.

There are many and widely differing ways of seeking nature. One method will not be agreeable or rightly helpful to everyone, any more than will a single r e l i g i o n a p p e a l equally to each i n d i v i d u a l, because of the great d i f f e r e n c e of environment according to different classes and types of people One of the ways to nature, most commonly employed, is that of walking, especially on a country road or through the woods. Horseback riding is likewise exhilarating and healthful. Rowing and swimming give exercise, which results in strength, in all parts of the body. If you do not desire the essentially physical activities, keep watch of the wind and weather, the sky and stars, the woods, the fields, the sea, in fact any part of the outdoor world which especially attracts your interest. An adult may well note and follow the example of children, who of all human beings are the freest from vainglory and hypocrisy, as they go through the woods enjoying the fresh country air and exercise, and stopping ever and anon to wonder at and inquire about each object which attracts their notice. This last characteristic—their wish for knowledge and freedom from the fear of betray-

ing their own ignorance in order that they may not be equally ignorant a second time—is worthy of careful consideration and relentless pursuit. Do not imagine that the woods of Maine or Michigan are alone worthy of attention; but enjoy these of the town of Greenwich, some of which are as uncultivated and wild as in the days when the Indians roved through them. Do not vainly wish for the Pacific but be content with Long Island Sound, which is marvelously interesting when you have become intimately acquainted with it. Great rivers and lakes are not necessary to furnish interest when every little brook, however insignificant, is just teeming with all sorts of wondrous things. As for the sky, there are as many constellations visible from Greenwich as from the far-famed Lick Observatory in California, and we surely have far more changes of climate than are prevalent there. Any small tract of uncultivated land is worth studying. To observe the weeds and the inconspicuous insects in the small yard of a city house is by no means degrading or worthless.

The true enjoyment of nature brings many good results. First, one is benefited physically on account of the pure country air and of exercise, if it is not indulged in to the extreme. Second, mental stimulus is gained through observation, which is the end and aim of all education, and the resulting power of expression if one tries in any way to impart his knowledge. Third, the spiritual side of a person is more fully developed, for contact with nature increases the love of the beautiful and of unity. This friendship with the works of the Creator leads to a truer and greater reverence for the Creator himself.

To gain these benefits, do not fear that you will have to make fine scientific analysis of everything, or do not imagine that it requires "gush" and shallow sentimentalism on your part; but, as in the words of Dallas Lore Sharp, understand that, "Nature study is the out-of-door side of natural history, the unmeasured, unprinted side of poetry. It is joy in breathing the air of the fields; joy in seeing, hearing, living the life of the fields; joy in knowing and loving all that lives with you in *your* out-of-doors."

**Life Increasing in Duration.**

The "Technical World Magazine" recently published a remarkable article under the title, "When is Man Old?" The editor says that throughout the world there are now living scores of



AT AGE (OR YOUTH) OF 112.
He walks at least two miles every day.

men and women who are near or even beyond the century mark. It will be recalled that we published in the March number an illustration of a bee-keeper that has kept bees for eighty-four years, and at the age of ninety-

seven is now actively caring for them.

The article in the "Technical World Magazine" shows that the average length of life has been steadily increasing and that those who exceed the average are many. This is ascribed to better hygienic and sanitary laws, pure food, length of the working day and better conditions in many other respects. It is stated that there are five or six thousand persons in the United States to-day that have attained to one hundred years. Some have reached one hundred and twelve. A Montana Indian proves that he is one hundred and thirty-three; an Oregon woman one hundred and twenty. Only two years ago there died near Quitman, Texas, a woman that had reached one hundred and thirty-six. It may be stated in this connection that we have in Stamford, near our ARCADIA, a woman now more than one hundred and seven years. Not long ago we published in this magazine the picture of a minister that died at the age of one hundred and two, in the Soldiers' Home in Noroton.

The "Technical World Magazine" publishes a photograph of a large group of men whose average is more than eighty-eight. Mr. Abraham Wilcox of Fort Worth, Texas, is now living and enjoying life at the age of one hundred and twelve. He walks two miles or more every day and looks forward with all the enthusiasm of a boy to a visit to the Panama-Pacific Exposition in 1915, when he will be one hundred and fifteen. Mr. Wilcox reads the newspapers every day and is interested in everything about him, from the food being prepared for his dinner to the latest feats by aeroplane. This aged man appears to be forty or fifty years younger than he really is. His skin is white and not deeply lined. His vision is excellent and he walks nearly erect. At the beginning of the Civil War he tried to enlist but was rejected on account of his age; he was too old.

It may be mentioned in this connection that The Century Company, of New York, publishes a book entitled, "The Age of Mental Virility," in which is shown that the greatest things have been accomplished by those well advanced in life.

Yet nowadays we hear of men who are retiring from active life at the time when they should be beginning their best work. Who was that famous philosopher that exclaimed, when well advanced in years, "Rest! Why should I rest now when I shall have all eternity to rest in?"



IN ACTIVE LIFE WITH AVERAGE OF MORE THAN EIGHTY-EIGHT YEARS.

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The rocks and shells, the frogs and lilies, always tell the actual truth so far as it goes. They give clear and decisive answers to distinct and clear questions. Their relations to our lives are such that the child can be led to ask concerning them simple and definite questions which shall at the same time be of vital interest to him. Thus, through commerce with them, he can learn how rightly to know. Associations with these, under right direction, will build up a habit of truthfulness, for nature is always truthful. She teaches truth from original documents. Every leaf on the tree is an original document in botany. When a thousand are used, or used up, the archives of nature are just as full as ever.—David Starr Jordan in "The Stability of Truth."



"TO THE NATURALIST THE DIVIDENDS ARE ENORMOUS."

## Helvellyn and Why.

BY ROBERT S. WALKER, CHATTANOOGA, TENNESSEE.

In England a young naturalist once had a Helvellyn—a mountain where he could enjoy frequent solitary strolls, meditate on the wonders of creation, forget the ills and the cares of every-day life and in general commune with nature in an inaudible voice. From Helvellyn he could view the surrounding country below and survey the heavens above. It is not strange that his rambles should be spoken of as "frequent"

In the spring of the year 1805 this young naturalist yielding to the call of nature and accompanied by his faithful dog ventured to visit Helvellyn. We can imagine the perfumed atmosphere, and the humming of the myriad insects in their busy search for nectar as



THE STREAM THAT MARKS THE LIMIT OF THE WOODED LAND.

they unconsciously cross-fertilized the plants, thereby doing a great work in the aiding of natural selection, to make the next generation of seedlings of a stronger constitution than that of their parents. We, too, can imagine the crystalline mountain lakes, and the chattering of the wild birds as they sought out agreeable companions for the summer. But while nature is sweet, gentle, pleasing and inviting, she is unmerciful. She beckons to her lovers and they follow—sometimes to their graves. She gives the best she has, but is often helpless to assist a creature in distress. The young naturalist met trouble. He lost his way. Nature said, "See my stars, or feel the moss on the sides of my trees, and go to thy house." But this was barely adequate. The naturalist tramped the sides and top of Helvellyn seeking directions, but to no avail. His faithful terrier panted for breath. Him, exhausted, nature sang to sleep on the soft green sod. His body withered. The terrier failed to understand his master's strange and unusual nap. The foxes and the ravens came to visit the remains, but the little companion defied them to disturb his master's slumber.

Three months elapsed before a searching party discovered his body. The half starved terrier, faithful to the end, grinned and the searchers stood back. No being had been permitted to touch his master's body. Although half dead he was unwilling even at this moment to give up.

It is not an uncommon death. The incident was soon forgotten by the average run of humanity, but Sir Walter Scott was deeply impressed. His serious thinking is disclosed in the following interpretation called

HELVELLYN

I climbed the dark brow of the mighty Helvellyn,
Lakes and mountains beneath me gleamed misty and wide:
All was still, save, by fits, when the eagle was yelling,
And starting around me the echoes replied.
On the right Striden Edge round the Red Tarn was bending,
And Catchedicam its left verge was defending,
One huge nameless rock in the front was ascending,
When I marked the sad spot where the wanderer died.

Dark green was that spot 'mid the brown mountain heather,
Where the Pilgrim of nature lay stretched in decay,
Like the corpse of an outcast abandoned to weather,
Till the mountain winds wasted the tenantless clay;
Nor yet quite deserted, though lonely extended,
For faithful in death, his mute favorite attended,



THE LITTLE BRIDGE AT THE FOOT OF HELVELLYN.



THE NEAR-TO-NATURE HOME NEAR HELVELLYN.
This belongs to Miss Elnora S. Walker, one of The Agassiz Association's Corresponding Members.

The much-loved remains of her master defended,
And chased the hill-fox and the raven away.

How long didst thou think that his silence was slumber?
When the wind waved his garment, how oft didst thou start?
How many long days and long nights didst thou number
Ere he faded before thee, the friend of thy heart?

And, O, was it meet that—no requiem read o'er him,
No mother to weep, and no friend to deplore him,
And thou, little guardian, alone stretched before Him—
Unhonored the Pilgrim from life should depart?

When a prince to the fate of the peasant has yielded,
The tapestry waves dark round the dim-lighted hall,



PARTICIPATING IN THE WEALTH OF HELVELLYN.
From left to right: Dr. Franklin Freeman, Mr. Henry R. Howard, an AA Corresponding Member, and Mr. Prosper Lazard.

With 'scutcheons of silver the coffin is shielded,
And pages stand mute by the canopied pall:
Through the courts, at deep midnight, the torches are gleaming;
In the proudly arched chapel the banners are beaming:
Far adown the long aisle sacred music is streaming,
Lamenting a Chief of the People should fall.

But meeter for thee, gentle lover of nature,
To lay down thy head like the meek mountain lamb,
When, wildered, he drops from some cliff huge in stature,
And draws his last sob by the side of his dam.
And more stately thy couch by this desert lake lying,
Thy obsequies sung by the gray plover flying,
With one faithful friend but to witness thy dying,
In the arms of Helvellyn and Catchedicam.

Three years ago I found a knoll—a miniature compared to the real Helvellyn. But it is my real Helvellyn. Thirty minutes from the city, and the cares of the day are forgotten on a wooded knoll covered with forest trees and plants, and alive with birds and insects. When I am asked, "Whence the name?" the answer is, "Read Scott's 'Helvellyn.'"

Poor investment? Absolutely so—from the banker's viewpoint. But to the naturalist the dividends are enormous.

The good cheer of Helvellyn soon leavens the soul of every one that enters its woods.

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### The Chasm Between the Real and the Artificial.

Our State Representative for Tennessee, Mr. Robert S. Walker of Chattanooga, in a recent personal letter uses these expressive words:

"As I pass by dwellings, the lights burning brightly, and the family grouped over a card table where they spend many hours at least three days in the week, I wish that I might have the power to direct some of their hours to the study of nature."

Every naturalist, every general lover and real student of nature knows what these words mean. He realizes how broad is the chasm between himself and those whom he would help, those who have no knowledge of what it means to study nature, to make it a resource and an enjoyment in life. To the naturalist there is no pastime. He does not need to kill time. He recognizes that life is too short to observe even a fair percentage of the attractions of nature.

Every true naturalist possesses the missionary spirit. Everywhere nature lovers are trying to interest others, working against their own financial interests, holding positions for a mere pittance of salary, and devoting their spare time to the beloved pursuit. No religious missionary is more genuinely zealous to help his fellows than the naturalist. Yet wide is the chasm. Recently while talking with a good friend, a lawyer, I exclaimed enthusiastically. "What do you think of the last number of THE GUIDE TO NATURE! Wasn't it a beauty!"

"Oh, yes," he said, "it is nice mechanically and has many beautiful pictures, but what of it all? What does it really amount to? It is just nature, and everybody knows nature. I know nature up in our cornfield. We raised a nice crop this last year."

And then he talked about the possibility of making money by farming in Connecticut. But from the real essence, the real educational uplift, the resourceful spirit of THE GUIDE TO NATURE, he was as far away as we are from the moon. All that he sees are the dollars and cents in his cornfield. To him the country amounts to nothing unless he can sell an old farm to a city resident. How can such a man be brought to a realization of the enjoyment, the inner meaning of nature? He is a thoroughly intelligent man of the type of many that are so difficult to reach, and have so much difficulty, or perhaps reluctance, in comprehending the meaning of the whole thing, and of knowing "what it really amounts to."

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There is no intellectual craze so absurd as not to have a following among educated men and women. There is no scheme for the renovation of the social order so silly that educated men will not invest their money in it. There is no medical fraud so shamless that educated men will not give it their certificate. There is no nonsense so unscientific that men called educated will not accept it as science.—David Starr Jordan in "The Stability of Truth."

## Poppies.

BY MRS. MARY EARLE HARDY, GRAND RAPIDS, MICHIGAN.

The writer knows a field in the northern border of the Western Reserve in Ohio, where, within the memory of the oldest inhabitant, never a poppy had grown. When the plowshare turned its turf, hundreds of poppies sprang into life, as if their sealed tombs had been suddenly opened, and their resurrection morn had come.

The late William Eleroy Curtis in his book entitled "From the Andes to the Ocean" has recorded a similar remarkable phenomenon as having occurred in South America. Great and unusual rains had fallen. The mountains sent down torrents that plowed their way to the sea, and everywhere from the Andes to the ocean the desert lands were drenched. A wild vegetation sprang up, where but drifting sands had been, and the flowers produced in the greatest profusion were poppies. The desert was ablaze with them. Where the seeds came from—nobody knows.

We are familiar with the page of history, in which it is written that the field of Waterloo drank the blood of the brave, and that after the next summer's plowing, the field broke into billows of red poppies

Note the cross in the heart of the poppy. It is no heathen flower.

Scarlet poppies, abundant in Europe and Asia, are in song and story. They are called "corn rose" in some parts of England, and in German fields, they are rivals of the blue corn flower.



CALIFORNIA POPPIES.
Photograph by Geo. G. McLean, Carpinteria, California.

Oriental poppies were believed to be favorites of the sun god and to represent his splendor. They held up flame colored cups to catch his golden nectar, and when one of them was plucked, if a word of gratitude for the poppy and that which it typified were spoken, a blessing was believed to follow.

The Alps have white poppies, spotless as if born of snows. England has its blue poppy—the only blue poppy known. Both of these varieties we see in our American rock gardens, where they thrive and are effective.

The opium poppy is the oldest of cultivated poppies. It is a genus of half a hundred species. Its sedative properties seem to have been long understood. Virgil tells of its sleep producing power.



MATILIJA POPPY (*ROMNEYA COULTERIA*)
Photograph by Geo. G. McLean, Carpinteria, California.

It has been a Chinese faith that it is lucky "to smell poppies three times a day."

All poppies science has called "escapes," "sports," save the California poppies, of which flower no land has greater wealth.

Santa Barbara County alone produces seven kinds. They range in color from the deep red of the exquisite *Meconopsis* or "drops of blood," to the white of the "thistle poppy," and the magnificent snowy queen *Matilija;* and run through the gamut of gold in the "free poppy" and *Capa de ora,* California's pride and statehood flower.

It is said that when Father Gunipero Serra first beheld this flower, he exclaimed, "At last I have found the Holy Grail!"

Our flower of golden fame owes to Russia its scientific name so bristling with consonants. Early in the past century a Russian nobleman fitted out a vessel to voyage around the world in the interests of science. Adelbert Von Chamisso sailed as naturalist, and Eschscholtz as scientist. Their ship, Ruric, entered San Francisco Bay at the time when this poppy was lighting the land with its glory, and Chamisso gallantly gave to it the name of his friend, and *Eschscholtzia* science still calls the flower, though to the common people it is the "cup of gold" or the golden poppy.

One who has never seen these poppies in their season in California, can hardly imagine their abundance and their glory. For every silver drop that falls during California's rainy season, the grateful earth pays back in gold;



A FIELD OF POPPIES.

and from the old *Camino real* and the "Valley of Angels" in the south, to the snow-capped mountains in the north, the golden poppies possess the land. Everywhere is the "verdure patched with cloth of gold." They are like beacon fires on meadow and on mountain slope, and we are told that mariners have seen their color when thirty miles out at sea. It is said that these golden poppies gave the name to the Golden Gate.

Notwithstanding all their pride in their golden poppies, Californians will tell you, "But, wait; you must see our Poppy Queen! You have never seen flowers until you see *Matilija.*"

The *Matilija,* of whitest, crumpled, silken tissue, is from five to ten inches across, and is filled at the center with circle upon circle of filaments, purple stalked and tipped with gold. It has other names suggestive of California and of mission bells but its most musical is *Matilija,* and its most heart alluring is "ama flower" a lingering love name given to it in the old Californian days of romance.

Sow their seed once and you have poppies forever. The seeds brought to me long ago from the Isle of Shoals, from the garden planted there with a song by Celia Thaxter, give me each succeeding year an ever increasing wealth, and as I stand among my treasures, I can do no less than gather them with the tenderness that Mother Nature shows as she lifts them on her loving bosom and lends them to us for a day, that we may love their diaphanous beauty, and be glad.

### An Unusual Hornets' Nest.

Mr. W. E. Covert, of Aldemere, B. C., Canada, publishes in the "American Photography" of Boston, a remarkable photograph of a hornets' nest. I asked him for the particulars. He is unable to give any details. He does not know what kind of hornet occupied the nest. He writes as follows:

"The nest itself was about six inches long, the neck four inches, the body two inches, with a circumference of eight inches at the largest part. It was found about two feet from the ground, on a poplar tree."

The photograph was sent to Dr. L. O. Howard of Washington, D. C. He writes as follows:



A HORNETS' NEST WITH A NECK

"An expert of this Bureau, Mr. S. A. Rohwer, reports that it is impossible to determine from the nest alone. The habit of making the nest in this fashion is very unusual for American species, and he knows of no nest of an American Vespula which normally has the cylindrical extension shown in the photograph. If adults are preserved from this nest, we would be glad to have them for determination, and we should also be glad to have a print of the photograph for our collection."

Can a reader give us any information on this subject?

### July.

The screech owl bids
With drowsy lids,
Glad welcome to the katydids;
The nestlings leave their downy homes,
And perch themselves on forest domes;
Green cornfields laugh in tassels gay,
And plow boys fork the new-cut hay;
Brown thrashers gripe,
While loud they pipe,
Red earthworms and big berries ripe.

—Robert Sparks Walker.




CHIPPING SPARROWS AND NEST.

### The Nesting Season.

This is perhaps the most interesting season of the bird year. It is far from possible to "cover" the subject of bird nesting in one short article; it could not be adequately done in the case of a single species. Personal experience will always be urged in this department; is especially urged at this season, with the caution that you use due care when near the nests. It is possible to see a great deal of the interesting traits which the birds now develop without going too near their nests.



THE HAUNT AND HOME OF THE PHOEBE.

Notice how they guard the secret of their homes; how their solicitude increases as the eggs hatch and as the young grow; their peculiar calls of caution, warning and protest when a hawk comes in sight. Make a study of any nesting pair. After the eggs hatch you may go as near the nest as you wish, with little fear that the precious fledglings will be abandoned. Watch the parent and the young after the nest is outgrown. Find, for example, a grouse with her brood. On such an occasion I have more than once let the old bird lead me away, then, having first made a rush in her direction, causing her to fly out of sight, I have hurried back and hid myself near where the young first disappeared (as they always do). In fifteen or twenty minutes I have heard the mother's first timid "mewing." Soon she calls more reassuringly, and on all sides the chicks respond with lisping voices. One from here and one from there they come out of their hiding places, they are beside their

mother again, and all together rapidly retreat from the scene of danger. They will repeat these manœuvres again and again if you repeat your tactics.

One may become unexpectedly intimate with nesting birds. Two years ago, in the midst of my cautious preparations to photograph a waxwing that I found gathering nesting material, the bird alighted on my shoulder. At another time a spotted sandpiper perched on my camera which had just been focused on her nest. To be able to stroke or to feed a bird as she sits on the nest is another occasional experience.

Another source of interest is the odd and unusual places in which nests are sometimes found. I have seen a house wren's nest inside of the hang-



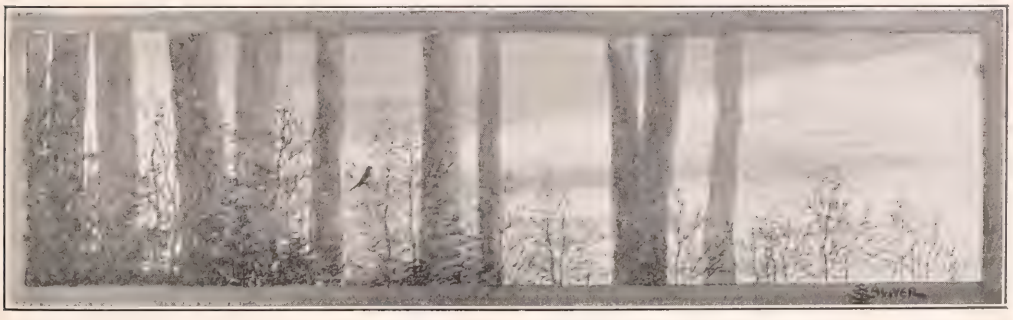
RED-TAILED HAWK (AT THE RIGHT) AND RED-SHOULDERED HAWK.
See letter from Theodore Marsh.



A NEST OF THE YELLOW WARBLER.

ing nest of a Baltimore oriole; a robin's nest flat on the ground of a closely cropped pasture; a phoebe's on the blade of an oar in a boathouse; a crow's in an apple tree and within easy reach from the ground; a colony of bank swallows nesting in a heap of sawdust; purple grackles nesting in a bird box, and another colony in the cat-tails with red-winged blackbirds. I have found two nests of the Baltimore oriole in a spruce tree. I have never even heard of another of this species so placed. These were side by side, good evidence that the same individual birds return to the same locality year after year.

Note the calls of young birds. There is in general a squeaky or squally character about these calls, yet one learns to detect many specific differences and degrees of differences, and he finds that their cries are no more alike than are the cries of human babies. A num-



WHEN THE EVENING SUN IS MERGED INTO TWILIGHT.




A BALTIMORE ORIOLE AND NEST.

ber of times I have overheard what seemed much like "baby talk" between bird parents, and have seen actions that appeared to be in mockery of their fledglings' petulance.

### Human Altruism.

Science is the flower of human altruism. No worker in science can stand alone. None counts for much who tries to do so. He must enter into the work of others. He must fit his thought to theirs. He must stand on the shoulders of the past, if he is to look far into the future.—David Starr Jordan in "The Stability of Truth."

### The Identification of Birds.

Otter Lake, Michigan.

Dear Mr. Sawyer:

I admire your sketches in "Birds in the Bush." They are beautiful, and true to life. On our Otter Lake I have seen ducks, some of which were pure white with a black streak down the back with black under parts, and white breasts. These I took to be males. Others were brown with white under parts and red heads. They were of medium size. I took them to be the wood ducks.

Please tell me which kind of blackbird makes a trilling sound. I have followed them and have tried to ascertain whether it is the red-wing or the crow blackbird, sometimes called the grackle. I have heard it in flocks of such birds but as the two kinds were together, I could not decide which kind made the sound.

How can I tell the difference between the red-shouldered and the red-tailed hawk, Do they breed around Otter Lake and in southern Michigan?

What are the little brown birds that nest on the ground, have white spots on the tail, and little horns on the head?

What is the color of orioles' eggs? What is the color of the different kinds of woodpecker eggs?

THEODORE MARSH.

The ducks, which you seem to have seen at some distance, appear to be male golden-eyes and redheads. At the usual distance it is difficult to note accurately the parts covered by each color, while it is comparatively easy to get a good general impression of the colors themselves. Besides the species mentioned above, I suggest that you look up in any good bird book, the scaup duck, the canvasback and the American merganser. At any rate, your ducks were probably not wood ducks.

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The "trilling sound" was probably made by the red-wing. Are you sure the birds associated with the latter were not rusty blackbirds? These are more nearly the size and shape of red-wings, and are even more likely to be found with them.

The field marks of the red-tailed hawk are the reddish tail, as seen from above, the black bar near the end of the tail, as seen from below, and the broken black band across the breast. The red-shouldered is not strongly marked, but the most important distinction in the field is the greater size of the red-tailed hawk. Both birds nest in Michigan. The red-shouldered is the more likely to choose a wet or swampy wood.

Horned larks are the birds with the

head tufts. They nest on the ground. Notice their black breast patch.

The eggs of the Baltimore oriole are marked like the red-winged blackbird's, but usually more finely. The ground color is white or whitish.

Woodpeckers' eggs are glossy white, differing chiefly in size, according to the size of the bird.—E. J. Sawyer.

### Those Reddish Brown Birds.

This spring we saw some birds which we were unable to identify, and we would be very grateful if you could tell us what they were.

They were feeding on the edge of a park among shrubs and evergreens and were quite timid. They kept about twenty-five feet from us so that we were unable to distinguish the markings, but the general coloring was a bright reddish brown, and the birds were about the size of an English sparrow. There must have been ten or twelve in the flock.—Miss Mildred Avery, Watertown, New York.

Your birds were doubtless fox sparrows. The time of year, the place, and "general coloring" point to these birds and to no others. We see the fox sparrows only in spring and fall while they are migrating northward and southward respectively, for they nest to the north and winter to the south of us. This bird gives the impression of a large, strongly marked, dark, reddish, song sparrow (see cut). He is a finer singer than the song sparrow. In fact, I know of no sparrow music



A FOX SPARROW.

which equals his. His habit of vigorously scratching among the dead leaves and twigs should help find and identify him.—E. J. Sawyer.

### Owl Surgery.
### An Experience with a Florida Barred Owl

BY R. A. SELL, HOUSTON, TEXAS.

A light drizzling rain added to the darkness of the night. The interlocking switch tower was lonesome, but



THE FLORIDA BARRED OWL THAT FLEW THROUGH THE WINDOW OF A SWITCH TOWER.

the operator was busy as usual. The 10:40 express had just passed and reports must be made out. Crash! Falling breaking glass! A flutter. The man at the desk saw an owl fluttering around on the floor. A Florida barred owl had flown through the window. No reason for his strange action could be found but in breaking the window he had also broken a wing and a leg. The next morning he was brought to the biological laboratory in a sorry plight for one of the broken wing bones protruded through the skin. Then it was decided to try surgery. Splints were constructed for the wing, the bone carefully set, the splints, including two pieces of turkey feathers, put in place and wrapped with a thick layer of darning cotton.

The leg was broken near the joint so that it seemed to make the splints impractical. The possibility of using metal splints bent to fit the place and carefully wrapped was discussed but finally abandoned. It was determined to try a plaster paris cast, but when it came to setting the leg and keeping it in place until the plaster paris hardened it was found that the muscles contracted sufficiently to let the bone slip out of place. In this way two casts failed. Then the feathers were clipped from the leg and the owl placed under the influence of chloroform. This proved a success and by noon the operation was completed.



"NEVER DID HIS EXPRESSION DISPLAY IGNORANCE."

Then the owl was placed in a cage on the fire escape. From that time on he became a pet of the entire class. They called him "Old Bar" and furnished him with enough food for several owls. The second week he became a good eater and it was amusing to see him club about after mice that had been turned loose in the cage from a wire trap. He ate a bat and a mole also a striped lizard but he declined a little green snake and seemed to be afraid of a little musk turtle.

"Old Bar" was never playful. He always assumed an attitude of seriousness. Never did his expression display ignorance. He seemed to be something of a philosopher since it is declared wise to assume wisdom.

While his ears were quite large it was very difficult to photograph them. After the second week he became



"OLD BAR" PERMITTED SOME FAMILIARITY.

more careful about his toilet and kept his feathers according to conventional owl etiquette. The third week he began to assume something of an owl pose, and to spread out the toes of the leg.

The forty-fourth day the splints were removed from his wing and the cast broken from his leg. There was a raw sore on the upper part of the leg, but the bone had united nicely. As the wing had not been set accurately there was a large knot and the bone was crooked, but the operation was considered a success. Two days later, being loose in the laboratory, he raised his body with his wings. After this he became more restless and he did not eat so well. At dusk the evening of the fifty-second day the cage was thrown open but as he did not seem to notice it and every body was waiting to bid him goodbye one of his good friends took him out of the cage and placed him on a step of the fire escape. He deliberately swung his head from one side to the other then spread his wings—and flew. He perched in the first tree, a large live oak, and there remained until darkness drove the watchers away. The next morning he was gone. But the morning after that he was perching in his old place in the cage which had been left open. He was not hungry. The cage was left open and the next morning "Old Bar" was gone. Though his cage was not disturbed for several weeks he did not return.

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### A Bird's Intelligent Act.

Stamford, Connecticut.

To the Editor:

We had a bird table at our home on which we put pieces of bread that had become dry. A blackbird took a piece of this dry bread, dropped it in a puddle of water in the street, soaked it there until it was soft enough to eat, and then he ate it.

A. C. Arnold.

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### Chief Expense in Missionary Work.

The largest expense is incurred in educating and informing our people about the work for which they are responsible and in leading them to support it adequately. — "Bulletin" Easter-tide, 1914, Episcopal Church.

### A Skilled Photographer of Birds.

Mr. Howard S. Adams, of Canton Corner, Massachusetts, who took the photograph of screech owls reproduced herewith, has found much pleasure in photographing birds and animals and will show us some of his work occasionally.



"WE ARE TWO OF A KIND."

### An Interesting Habitat Group.

Stamford, Connecticut.

To the Editor:

In the development of a small museum, it is naturally difficult to carry out ideas which from an educational standpoint would be of real benefit to visitors.

Perhaps the most difficult is the construction of large habitat groups to depict birds of various types and climes in their natural environment.

The cost of such work is high, and when it is necessary in addition for one individual to construct the group, mount the birds and paint the background, naturally a great amount of time is required.

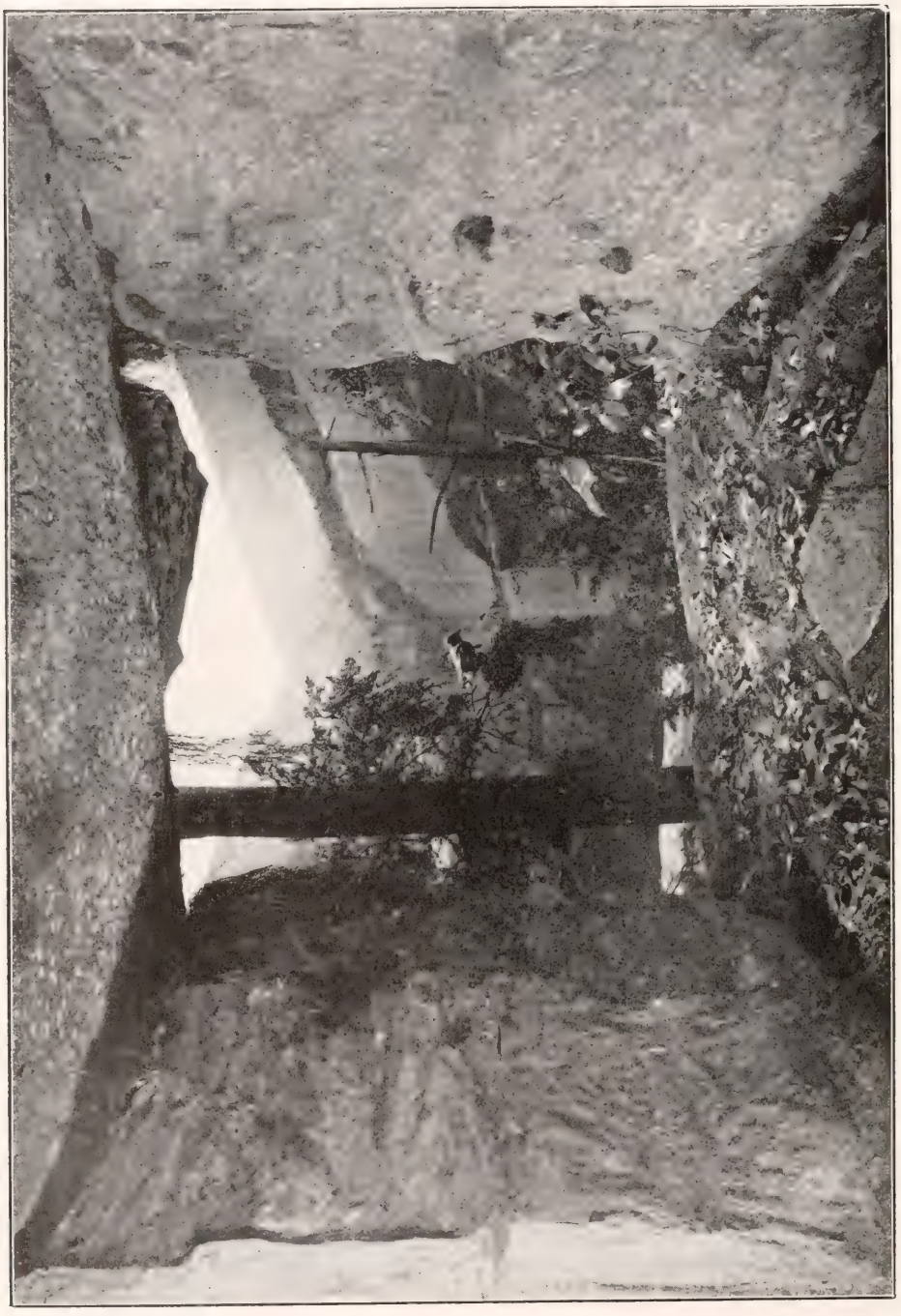
The group shown in the illustration is the result of some five months' labor, during which time it was necessary to stop the work and devise the best method in which to construct each part, as this is only my second attempt to perform such a task.

The group, as shown originally, rep-

resented the cedar waxwings in their nesting haunts in the north. Since the photograph was taken, the name has been changed into "Bird Life of the Canadian Zone." A new background was painted from photographs of mountain scenery in British Columbia. In the foreground the natural cave remains, with the addition of ferns, and other beautiful plants characteristic to such localities. Several birds of the Canadian zone have been placed in the group, and when it is seen from a darkened room with only the great misty valley and snow-capped mountains in high light, and only occasional shadows, the lighter patches sifting into the cave, the result is not altogether unpleasing.

Very truly yours,

PAUL G. HOWES.



THE HABITAT GROUP IN THE MAPLEWOOD MUSEUM, STAMFORD CONNECTICUT.
Courtesy of "The Oologist."

# THE STARRY HEAVENS IN JULY

## The Starry Heavens in July.

BY PROF. ERIC DOOLITTLE OF THE UNIVERSITY OF PENNSYLVANIA.

The two most striking changes that will be noticed among our evening stars since last month are those due to the complete entrance of the wonderful summer branch of the Milky Way into the eastern part of the evening heavens and the reappearance of the highest point of its arch being nearly two thirds of the way from the eastern horizon to the zenith. There is now therefore an excellent opportunity not only to study its wonderful structure, but also to examine the beautiful constellations which we meet as we follow its course over the sky.

### The July Stars.

To one who wishes to become fami-




Figure 1. The Constellations at 9 P.M., July 1. (If facing south, hold the map upright. If facing west, hold West below. If facing east, hold East below. If facing north, hold the map inverted.)

striking and always interesting group of the Scorpion in the south. The former, that Golden Pathway crowded with swarms and clouds of distant suns, now stretches entirely across the eastern sky from the south point of the horizon to the north, the liar with the star figures, there is indeed at this time of year no better way than to begin his study with those groups which border upon and are immersed in the Milky Way. If he chooses a clear, moonless night, he will have no difficulty in finding Perseus,

a not very bright group, almost on the ground in the exact north, while above this are the bright stars of the W-shaped Cassiopeia, and it is here that the Milky Way is narrower and brighter than in any other part. Two especially bright regions are at the points E and F, Figure 1, the former being the beautiful Double Cluster in Perseus, the most satisfactory of all star clusters for examination with a small telescope. Then follows Cepheus, while the highest part of the arch is occupied by the beautiful Northern Cross and the very brilliant Vega with the other stars of the Lyre.

Descending the arch toward the south, we come next to the faint Arrow, the curious group of the Dolphin, or Job's Coffin, the Eagle, and finally, but little above the ground in the south, there is found the long group, Sagittarius, the most noticeable feature of which is the little Milk Dipper which lies in an inverted position, the end of its handle being at C and the front edge of the bowl at D.

The long stream of stars which, beginning at H, extends down almost to the exact center of the Milky Way, belongs to the tail of the Serpent, the head of this very long constellation now lying almost due south at the point B. The fainter stars in the great, comparatively vacant region between this winding stream and Hercules form Ophiuchus, the Serpent Holder, who is holding the Serpent in his two hands. The position of his right hand is marked by the pair of faint stars at K, and that of his left hand by the similar pair of stars at L.

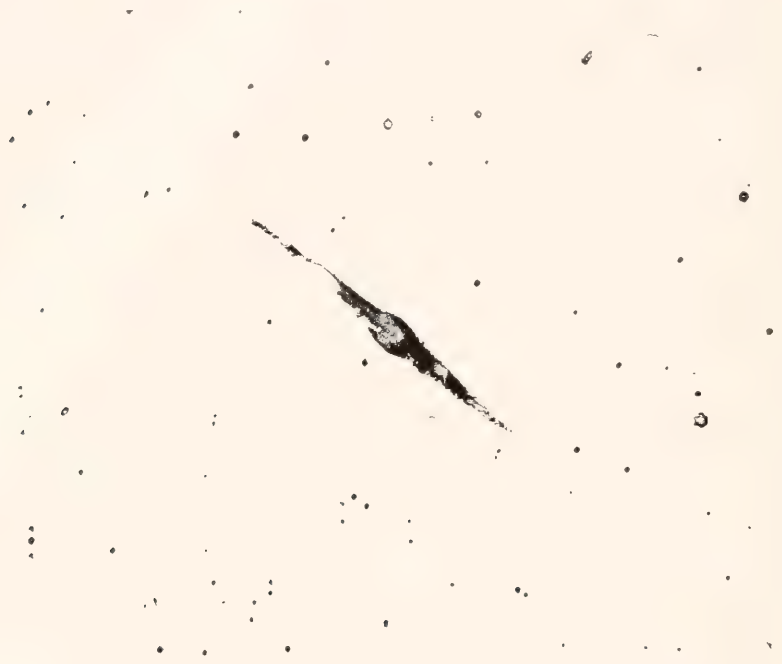


Figure 2. A remarkable spiral nebula which we view nearly edgewise and whose appearance strongly suggests that it is a solar system in process of formation. This nebula is situated at the point W of Figure 1. The appearance of the nebula observed in Virgo is very similar.

Finally, in the extreme south, we have the magnificent group of Scorpio, with its striking stream of bright stars extending from N to R, and its fiery red Antares, at T. The tail of the Scorpion extends downward and below the horizon in the south, but, again curving upward, stretches along the center of the Milky Way, and finally terminates in the Sting at the Star M.

This last star is seen as a pretty little pair of stars in a pair of opera

glasses. At the point U, about halfway between the stars V and T, there is a remarkable cluster, called by Herschel the richest mass of stars in the firmament, but which is so condensed that in a small telescope it appears only as a filmy point of light. This cluster is on the western borders of a region so remarkably starless that Herschel supposed that the stars of this region were in some way drawn aside to form the cluster. In 1860 this dark space was lit up for a short time by the blazing out here of a temporary star. At the point X a far easier cluster will be found, very easily visible in a pair of opera glasses, and even to the naked eye. It first appears as a small bright patch in the edge of the Milky Way, but is easily seen to be made up of thousands of bright stars crowded closely together.

There are hundreds of objects of interest which will be found during an exploration of the broad path of the Milky Way, from Perseus in the north to Scorpio in the south. Only a very few of the more striking ones can be mentioned here, but the reader who is interested may find many excellent little guidebooks, not only to the region, but to the entire face of the sky. If he possesses a small telescope, he will find, whatever its size, that there are books especially prepared for his instrument and the possession of at least one such book will very greatly increase his enjoyment of an exploration of the heavens.

### The Planets In July.

Mercury remains too near the sun to be observed during July.

By far the most brilliant planet of the month is the beautiful Venus, which continues its very rapid motion toward the east, passing through Cancer and almost the entire length of Leo, and mounting each evening perceptibly higher in the western sky. On July 13 it will pass above the bright star, Regulus, but as it will then be separated from this star by a distance equal to three times the apparent diameter of the moon, the star figure so formed will not be so striking as if the approach were closer.

In the telescope this bright evening star is seen to be but little more than half full; the dark shading of its surface as the boundary line between the planet's day and night is approached and the twilight effect due to its dense atmosphere are already becoming very conspicuous.

Mars is still quite high in the west, but its distance from the earth is so great that it is now an unsatisfactory object in the telescope. On July 1 it is a little way to the east of Regulus, and, like Venus it is continually moving eastward, entering the western borders of Virgo by the end of the month.

The observer will notice how very rapidly the brilliant Venus is overtaking the waning Mars. The brighter world will pass to the east of Mars on August 5; at this time the two planets will present the appearance of an interesting double star in the western heavens and will form a beautiful figure for observation with a small telescope

Jupiter is a little way due south from the star at A, Figure 1, and is just beyond the borders of our evening star map. After half past nine o'clock throughout the night, however, it is a conspicuous object in the southern sky.

Uranus is also beyond the borders of our map, almost in the center of the constellation Capricornus. Saturn and Neptune are both morning stars, and are too near the sun to be well observed during this month.

On July 2 at 7 P.M. the earth is at its greatest distance from the sun; it is then 3,100,000 miles farther away than when in January these bodies



Figure 3. A typical spiral nebula. Were this seen edgewise, it would probably present much the appearance shown in Figure 2.

are nearest together. On account of this varying distance our northern winters are slightly warmer and also shorter than are the winters of the southern hemisphere. It is natural to seek in this fact an explanation of

the reason why a greater accumulation of ice is found around the south pole of the earth than occurs around the north pole. And as this ice, by its gravitating pull, must draw an undue proportion of the waters of the sea towards itself, it may be that this is the explanation of the fact that the waters are drained away from the northern regions leaving, for example, the broken lands of northern British North America exposed, and submerging the lands in the extreme south. And many believe that this varying distance of the earth from the sun thus affords a clear explanation of the well ascertained fact that the earth is, accurately speaking, egg-shaped, the portion below the equator being slightly larger than that above it.

### The New Comets.

A comet was discovered on May 17, which was almost bright enough to be visible to the eye, and which it was strongly hoped might become a conspicuous object. But when its path about the sun had been computed it was found that its great brightness at discovery arose only from its nearness to the earth. It passed nearest us on May 20, and ever since that time has been very rapidly drawing away, its brightness now being but one twenty-fifth of that which it had at discovery. The path of this comet among the stars is shown in Figure 1, but it is now only visible in the larger telescopes.

The last comet of 1913 will this month emerge from behind the sun into the morning sky. During this month it is moving quite rapidly through the constellation Auriga, and it is hoped that when it has withdrawn from the sun's rays and entered Ursa Major it may become conspicuous to the naked eye. This will hardly occur before August or September, however, if at all.

### The Spiral Nebulas.

The recent announcement that the well-known spiral nebula which is situated at Z, Figure 1, was actually observed to be r o t a t i n g will, if confirmed, possess the very highest philosophical interest. While the majority of astronomers believe it probable that these strange objects are true nebulous clouds within the borders of our universe of stars and that they are each condensing into a central sun with worlds revolving about it, others vigorously contend that they are not true nebulas at all but are star clouds immeasurably far away from our universe. This recent, most important discovery will not, if confirmed, disprove this latter conclusion, but it will apparently render the truth of the first hypothesis more probable.

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### What is the Best Time of Life?

If after death at a good old age, say one hundred years, you were given the choice of a body to be owned for all eternity, what would you take? Perhaps you have told the child that he is at the happiest time of his life, but would you select your child body as the best for all eternity?

You may have eulogized the fullness and the richness of the memories of your Indian summer of life as the best, and assuming that the body is then in full health, would you select that in preference to one in middle age? Would you resume your body as it was at forty, fifty, sixty or seventy years—that is, supposing you have aimed at one hundred with a well-kept physical machine?

A similar question was asked a long time ago (I Cor, 15, 35), "With what body do the dead come?" Well, if you could have for all time a physical body, which of your old cast-off bodies would you resurrect and again wear?

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### Investigating Nature in Brazil.

The strenuous naturalist, Theodore Roosevelt, has been investigating the Brazilian wilderness and writing interesting accounts of the trip for "Scribner's Magazine." The first installment was in the April number. We advise lovers of nature not to miss these interesting articles. The effective illustrations were taken mostly by photographers in his party.

---

### Not So Stupid After All.

"Come, sir," said the teacher to the boy at the foot of his class, "how do you pronounce s-t-i-n-g-y?"

The boy at the foot scratched his head.

"Well," he answered thoughtfully, "it depends on whether the word is applied to a human being or to a bee."—"Woman's Home Companion."

# THE CAMERA

## A Winter Photograph Saved for Summer Refreshment.



Just to cool your eye,
In the month of July.
Photograph by Mr. Harry Staley, Singer's Glen, Virginia.



AFTER A THAW.
Photograph by Wm. S. Davis. Cut by courtesy of "The Photographic Times," New York City

**Strong Statements by John Burroughs**

I have a suspicion that "nature-study" as now followed in the schools—or shall I say in the colleges?—this classroom peeping and prying into the mechanism of life, dissecting, probing, tabulating, void of free observation, and shut away from the open air—would have cured me of my love of nature. For love is the main thing, the prime thing, and to train the eye and ear and acquaint one with the spirit of the great-out-of-doors, rather than a lot of minute facts about nature, is, or should be, the object of nature-study. Who cares about the anatomy of the frog? But to know the live frog—his place in the season and the landscape, and his life-history—is something. If I wanted to instill the love of nature into a child's heart, I should do it, in the first place, through country life, and, in the next place, through the best literature, rather than through classroom investigations, or through books of facts about the mere mechanics of nature. Biology is all right for the few who wish to specialize in that branch, but for the mass of pupils, it is a waste



MR. SCHLESSMAN'S PHOTOGRAPHIC STUDIES OF DUCKS.

of time. Love of nature cannot be commanded or taught, but in some minds it can be stimulated.—"Our Friend John Burroughs," by Clara Barrus.

### Photograph of Many Ducks.

Mr. E. H. Schlessman sends two remarkable photographs of a flock of canvasback ducks. In the foreground, the ducks are at rest, or just beginning a flight; in the background the majority are in flight. Mr. Schlessman, an expert photographer, states that the ducks were extremely tame on account of the lack of food. This explains why he was able to get so near to them.

Science is human experience tested and set in order. The primal impulse as well as the final purpose of science is the conduct of life.—David Starr Jordan in "The Stability of Truth."

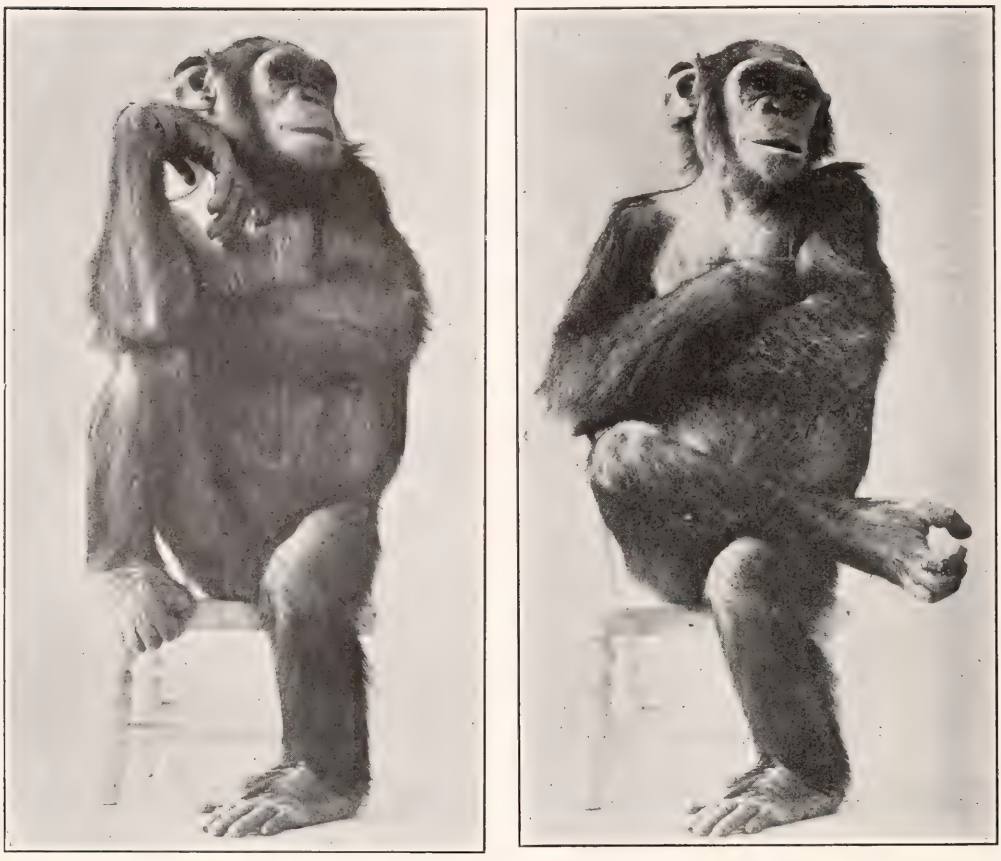
### The Crowing Rooster.

Here is a perfect photograph of a crowing rooster. It is lent to this magazine by "Kodakery," a publication of the Eastman Kodak Company. An ideal worth striving for has here been realized. Note how perfect is the detail of every part of the comb. Observe also the scales on the legs. The pose too could not be improved. It is a perfect piece of photography. It may well inspire every user of a camera. Happy the camerist that can equal it.



A TRIUMPH IN PHOTOGRAPHY WORTH CROWING ABOUT.

## Much Depends on One's Position in Life.



YOU MAY TAKE YOUR CHOICE WHEN SITTING FOR A PORTRAIT.

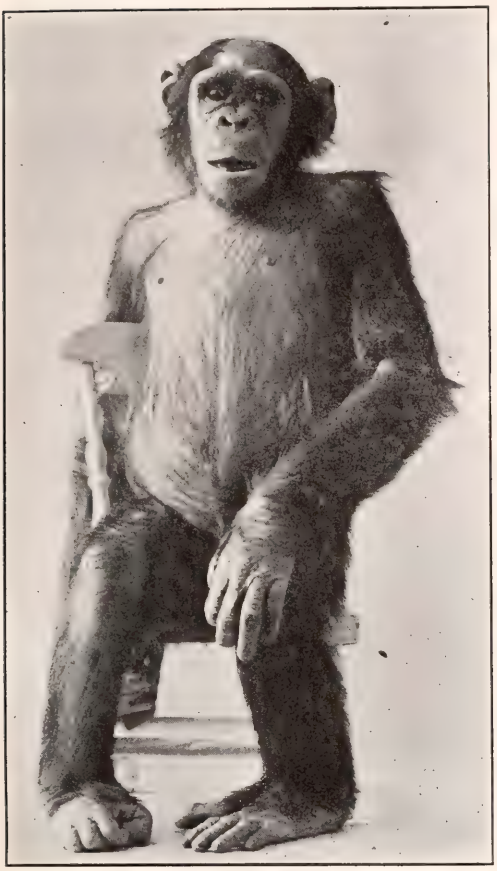
### Who are the Nature Lovers?

BY THE HON. HORACE W. TOWNES OF IOWA IN THE HOUSE OF REPRESENTATIVES, WASHINGTON.

It is not the athlete or the dilettante who really loves nature. Neither is beauty hunger confined to the rich and cultivated. It is shown in the modest window garden or the broken cups of the poor where a few geranium slips are grown and watched with loving care. It is not because of the demand of the rich that every city in the land is building spacious city parks and botanical gardens. It is because of the demand for fresh air, for the welcome shade, for the green grass and the open spaces, and an uninterrupted view of the sky and the stars, that comes from the poor. The nerve-wrecked worker in the clanging factories, the tired and weary seamstress from the tenement shops, the sick and suffering children whose eyes brighten at sight of a flower—these are the real "nature lovers."

Indeed, not to love the beauty of the sky and sea, of forest and flower, is to be defective or deformed. The highest types of humanity are those who stand nearest nature and love her most, who open their eyes to her beauty and their hearts to her ennobling influence. It was Emerson who said. "Not in nature, but in man is all the beauty and worth he sees"—that is, the beauty and worth in nature can not be known by those souls which

**Especially when You are before the Camera.**





Photographs on this and previous page by courtesy of The New York Zoological Society.

BUT REALLY IT IS TIRESOME TO KEEP ONE'S ARMS IN AN ELEVATED POSITION.

are not large enough to contain them.

Were it not for our increasing intelligence and our growing appreciation of the sublime and the beautiful we should not have established our national parks. We have realized their use and value in the generation in which we live, and we have realized of what inestimable worth they will be to the generations yet to come. "A thing of beauty is a joy forever," sang Keats, and the verse has sunk so deeply into the consciousness of the world that it has become a proverb for all peoples. In what supreme measure is the saying true in this case. As the years go on, as intelligence increases, as civilization advances, as man's appreciation and love of the sublime and beautiful enlarges, this park preserved as God made it will be indeed "a joy forever."

Really, gentlemen who sneer at "nature lovers" do not mean what their disparagement might imply. They are all themselves "nature lovers." All men not congenitally defective are. Even the savage, without understanding his impression, looks with pleasure on a beautiful landscape. Exactly in the measure in which intelligence is developed and civilization advances does this appreciation and love increase. The man or woman whose broad culture and enlightened humanitarianism takes the most exalted form seeks most and loves best "communion with her visible form."

WRITE WHAT YOU HAVE SEEN

# THE FUN OF SEEING THINGS

FOR YOUNG FOLKS

EDITED BY EDWARD F. BIGELOW

ASK WHAT YOU WANT TO KNOW.

ARCADIA, Sound Beach, Conn.

**Stop. Think a moment. You may have seen hundreds, yes, thousands, but is there anything more remarkable in all this world than an unfolding rose?**



FROM BUD TO BLOOM HOW MARVELOUSLY THE PETALS UNFOLD.



IT IS REAL FUN TO EXAMINE A ROSEBUD AND SEE HOW ALL THE MANY PETALS ARE PACKED IN SMALL SPACE.

This photograph and the one on the previous page are kindly contributed by Mr. Nathan R. Graves, Rochester, N. Y.

### The Fun of Moth Hunting.

In keen enjoyment and true sport sugaring equals either hunting or fishing. One is thrilled with excitement at almost every step taken in the darkness amid rustling bushes and trees along the river's bank. The flashes of light and the dense shadows which your lamp awakens in the foliage, the boulders, the stumps and fallen logs, or in the deep gorge and along the side of the high cliffs are apt to make one timid and fearsome at first. There are bound to be little surprises and half-adventures, such as the sudden whir of a bird's wings or the crackling of a dead branch under the foot of some animal, and the gloom and solitude tend to make these harmless episodes almost tragic. People are not generally given to wandering around alone at night with a lamp and cyanide bottle, and the feel of the night air and the lonesomeness give plenty of "color" to your journey. It is barely possible that the gruesomeness and fancied danger has something to do with keeping people from enthusing over sugaring, but with a little experience these things add zest and spice to the fun. It is royal fun, and the supreme moment is when you approach a tree that is fairly covered with gloriously beautiful moths. They are ready to disappear at the slightest warning. They do not as a rule light upon the mixture but are found sipping at its edges where they can fly away the moment they sense danger. You must approach stealthily, and

must work swiftly and dextrously. The least noise, a slight blunder, a little haste or an instant's hesitation and the prize specimens will be sailing safely above your head. When you have turned your light upon the tree do not shift the rays away until you have finished, else the change from light to darkness may startle the wary watchers. It is a fact that some varieties of moths get stupidly drunk and it is no fun at all to take them, but to capture the really desirable species requires skill and adroitness and is great sport.—"The Butterfly Farmer."

### Sundials Made of Small Rocks.

Mr. Fred Harvey of Kansas City, Missouri, kindly contributes to THE GUIDE TO NATURE two photographs of sundials—one showing mountain time, the other central time. So far as construction is concerned, the dials are practically similar, both having the hour lines made of small rocks. We reproduce herewith the one showing central time. Here is a good suggestion for our young folks. In almost any place a sundial of this form could easily be constructed. It would be interesting to watch the progress of the shadow of the slanting pole along the hour line.

These sundials are at Dodge City, Kansas, where the railroad time changes from central to mountain. The traveler may take his choice, at either sundial, according to the direction in which he is traveling. Each dial is about thirty feet in diameter. The rims are brick.



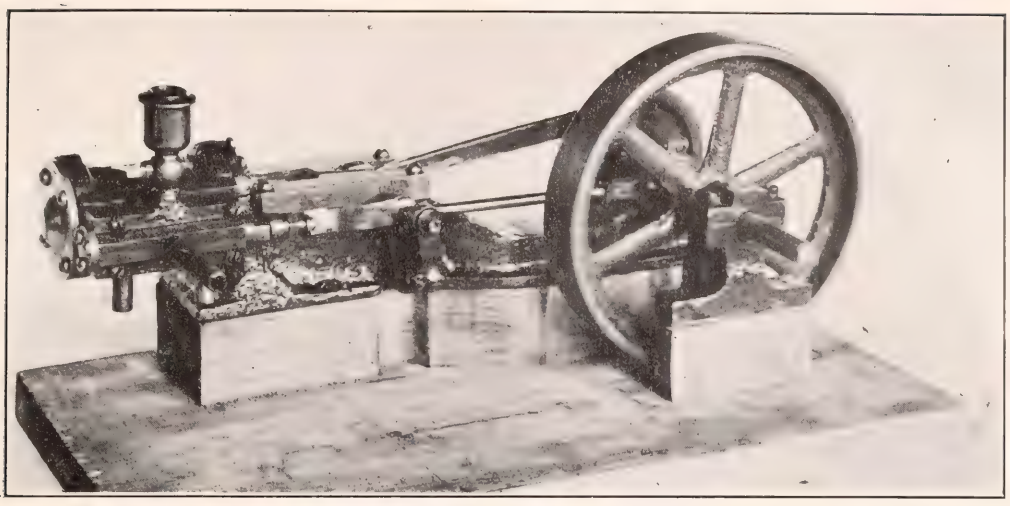
A NOVEL SUNDIAL AT DODGE CITY, KANSAS.

### Why People Walk in Their Sleep.

BY DR. ROBERT T. MORRIS, NEW YORK CITY.
(In response to an inquiry)

Several explanations have been given for sleep-walking. One explanation is this:

The brain is never asleep as a whole, A part of its action, expressed in what we call the subjective mind, is more or less "aware" all of the time, day and night. Thus, if we wish to arise at an unusual hour in the morning, we usually awaken at the time desired. If a clock stops in the middle of the night, we arise and set it going, if we are not too lazy. Sometimes a source of irritation, like a decayed tooth or an improperly digested meal, will awaken just enough of the brain to make one wish to do things which he would not do if fully conscious. The partly awakened portion of the brain may take the individual off on a walk; it allows him to avoid obstacles and to engage in simple acts. Some people talk in their sleep, others walk in their sleep, others attend strictly to business when they are in bed.



THE ENGINE MADE BY AN OHIO BOY.

### A Small Engine Made by a Boy.

Salem, Ohio.

To the Editor:

This small steam engine was built by an Eastern Ohio boy, between his fifteenth and sixteenth birthdays.

The engine measures sixteen inches over all, is six and one-half inches wide (along length of shaft). The wheel is seven inches in diameter, the rim one and one-quarter inches in width, and the shaft one-half inch in diameter. The bore of the cylinder is one and one-half inches, and the stroke two and one-quarter inches.

The iron castings were neither "filled" nor painted, hence they look rougher in the picture than they really are.

H. W. Weisgerber.

### The Home of the Swallow.

The natural history teacher was working hard but receiving rather unsatisfactory answers to her questions. At last she inquired:

"Now what little boy or girl can tell me where the home of the swallow is?"

Long silence, then frantic waving of a diminutive hand.

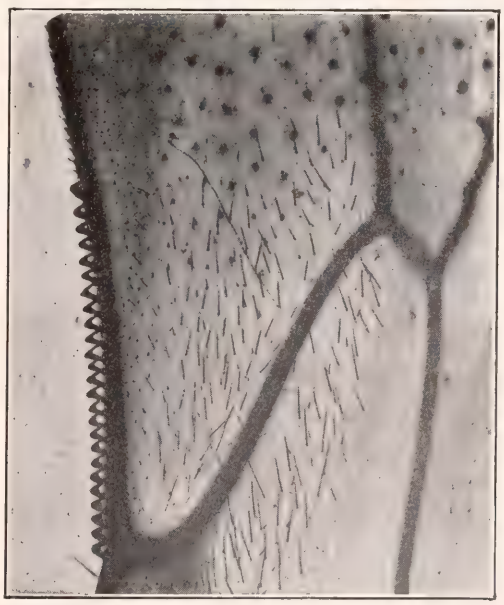
"Well, Bobby, where is it?"

"The home of the swallow," declared Bobby in all seriousness, "is in the stummick."—"Ohio Farmer."

### The Hooks on the Wings of the Honeybee.

In flight the hind wing is always attached to the fore wing by means of these hooks, and by watching at the entrance of a hive, one may see the bees unhook the hind wings just bebore they fold them down. Bees may sometimes be observed on the entrance board or even in the hive, with the wings still attached together, in which event they are held out from the sides and do not lie down on the back.

There are no hooks on the edge of the front wing to which these are attached, but these hooks catch on the edge of the wing that is turned over for the purpose.



THE HOOKS ON THE HONEYBEE'S WING

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## Necrology.

WARREN H. TAYLOR

STAMFORD, CONNECTICUT

DIED JUNE 11, 1914

Sustaining Member since February, 1911

A real lover of Nature, true friend and much appreciated Member of The Agassiz . . . Association. . .

### Contributions of Natural History Specimens.

Mr. Francis H. Mayhew, Frankford, Pennsylvania: neckties made from artificial silk.

Miss Belle W. Ferris, Sound Beach: screech owl.

Dr. W. H. Sylvester, Natick, Massachusetts: micro slides.

Frank W. Lacy, Private U. S. M. C., Las Animas, Colorado: micro slides.

Mr. Paul G. Howes, Stamford, Connecticut: cavity nest for woodpeckers.

Mr. Frederick A. Waldron, New York City: cocoon of common garden spider, *Agriope riparia.*

Mr. Edward Myrick, Stamford: A true Tarantula, not the so-called banana spider often called a Tarantula.

### The Billposter a Great Menace to Nature.

Stamford, Connecticut.

To the Editor:

In your journal you justly eulogize the beauties of the nature that surrounds us. You often find them where from the casual observer they remain hidden. You make the old wall our friend. Its cold stones are softened by color, by light and shade, until one longs for the peaceful days of those that built such walls. You revive the memory of "old times" and of historical events, when you point to an elm that has withstood the elements perhaps for centuries. It may have seen battles. It surely has shaded and comforted many a weary settler.

In the midst of our reveries, we look up—and—behold—a monstrous frame, representing a rural scene, to divert our thoughts to somebody's advertisement of milk chocolate.

Another similar outrage stirs your blood to the boiling point. It looms up at a picturesque spot, among ancient, moss-covered rocks, graceful junipers and cypresses, to force you to think about an automobile tire, a painted tire thrust into a beautiful landscape. That you may not forget his tire, the maker plants his annoying poster on whatever road you may follow, so that your enjoyment of the beautiful scene is destroyed, because you are not allowed to look at it. In the present case the tire-maker will gain nothing, for the victim will get a tire from another source. So shall also his choice of chocolate be from a manufacturer that puts his money into quality.

The owner of the offensive property, who is a party to this nuisance, may have a right to offend the eye of the public. Will his land gain by it? If so, what satisfaction to know he has the ill will of his neighbors?

Can you, Editor, not guide these men into the right spirit of nature and induce them to combine their commercial efforts into something more elevated?

Yours faithfully,

ED. SANDREUTER.

---

I am sensible to the lights and shadows, the silences and sweet sounds of the out-of-doors. Increased success to THE GUIDE TO NATURE and The Agassiz Association and may the next generation of Americans know more and love better the quiet wonders of the woods and fields.—Reverend Wallace H. Finch, First Methodist Episcopal Church, Stamford, Connecticut.

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I hope your appeal may meet with a more satisfactory response than is frequently the case with such appeals. It seems strange that so worthy a cause should receive such halting support, while others certainly no more worthy are overwhelmed with funds.—Ellis B. Noyes, Portsmouth, Virginia.

# WONDERS IN THE MINERAL KINGDOM

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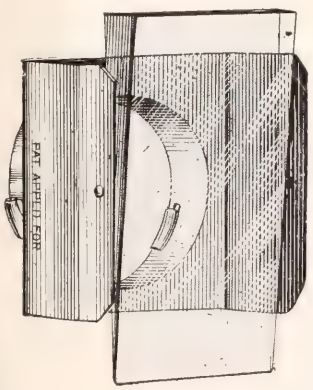
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**Insects:. Their Life-Histories and Habits.** By Harold Bastin. New York: Frederick A. Stokes Company.

This book appeals to lovers of insects on account of its mechanical make-up and the superior quality of the illustrations rather than for the text. The latter is as good as that found in most books pertaining to insects, but many of the illustrations are far superior to those usually supplied. They are remarkably good. The book as a whole is attractive.

---

**The Stability of Truth.** By David Starr Jordan. New York: Henry Holt and Company.

Here is a real book, a book that says something worth saying and worth reading. As one peruses it and notices the impressive sentences, many of which might be quoted as aphorisms, it becomes so full of meaning that it irresistibly appeals to one's sense of the fitness of things. The book is so full of "meat" that it reminds one of the old lady who said that she does not like Shakespeare's plays because they all are made up of quotations. We shall take the liberty of quoting from time to time, in this magazine, some of the expressive statements that seem so well adapted to attract our students' attention toward "The Stability of Truth."

---

**The Protozoa.** By Gary N. Calkins, Ph.D. New York: The Macmillan Company.

The Protozoa not only claim the interest of the professional naturalist, but also that of a wider circle of nature students who, with the aid of the microscope, have always found here a fascinating field for observation and research. In writing the present volume, embodying a summary of the more recent discoveries concerning these minute animals, the author has aimed to keep in mind the needs of the latter class of naturalists, as well as those who search more deeply in the unicellular organisms for the solution of many morphological problems which remain unsolved in the higher animals, or for vital processes which afford a transition from the manifestations of life in its simplest expression to life as seen in the lower forms of invertebrates.

While it is in the main a technical book, it contains much of popular interest regarding these wonderful organisms of which few people have any knowledge. Is it not amazing that there should be a world formed of myriads of animals so widely extended in every vicinity that are yet absolutely unknown to ninety-nine per cent or more of the human beings that live so near them? These Protozoa, if they were large enough to be visible to the naked eye, would attract the attention of the entire community. The greatest show on earth never held one-hundredth part of the interest that exists in these little creatures so queerly formed and with actions so peculiar. It is literally true that nature is to be admired most in the things that are seen the least.

**The Philosophy of Art.** By Edward Howard Griggs. New York: B. W. Huebsch.

This philosophic, artistic and classical writer in his book as in his lectures shows what art is, how it comes out of the life of man, and what specific function each of the great ideal arts fulfills in relation to the human spirit. He says of art what applies as well to nature:

"It would seem that the splendid energy which has built up our wonderful material civilization is now to find expression in the life of the spirit, with the promise of equally great achievement there."

---

**This Wonder-World.** By Agnes Giberne. New York: American Tract Society.

This book contains much valuable material and is written in the spirit of our motto, Per Naturam ad Deum. The gist of the whole thing is in the following quotation:

"Think a little about the extraordinary world in which they live

"Perhaps the thinking, once begun, will go on. Perhaps you will begin to see for yourself, to study nature, for yourself, to find out for yourself some of the hidden marvels that are all around on every side.

"Somebody may say to you, 'Oh, what is the use. What does it matter? Why need we care how things are made, so long as we can enjoy them?'

"But that seems to me a very poor and shallow way of looking at the question.

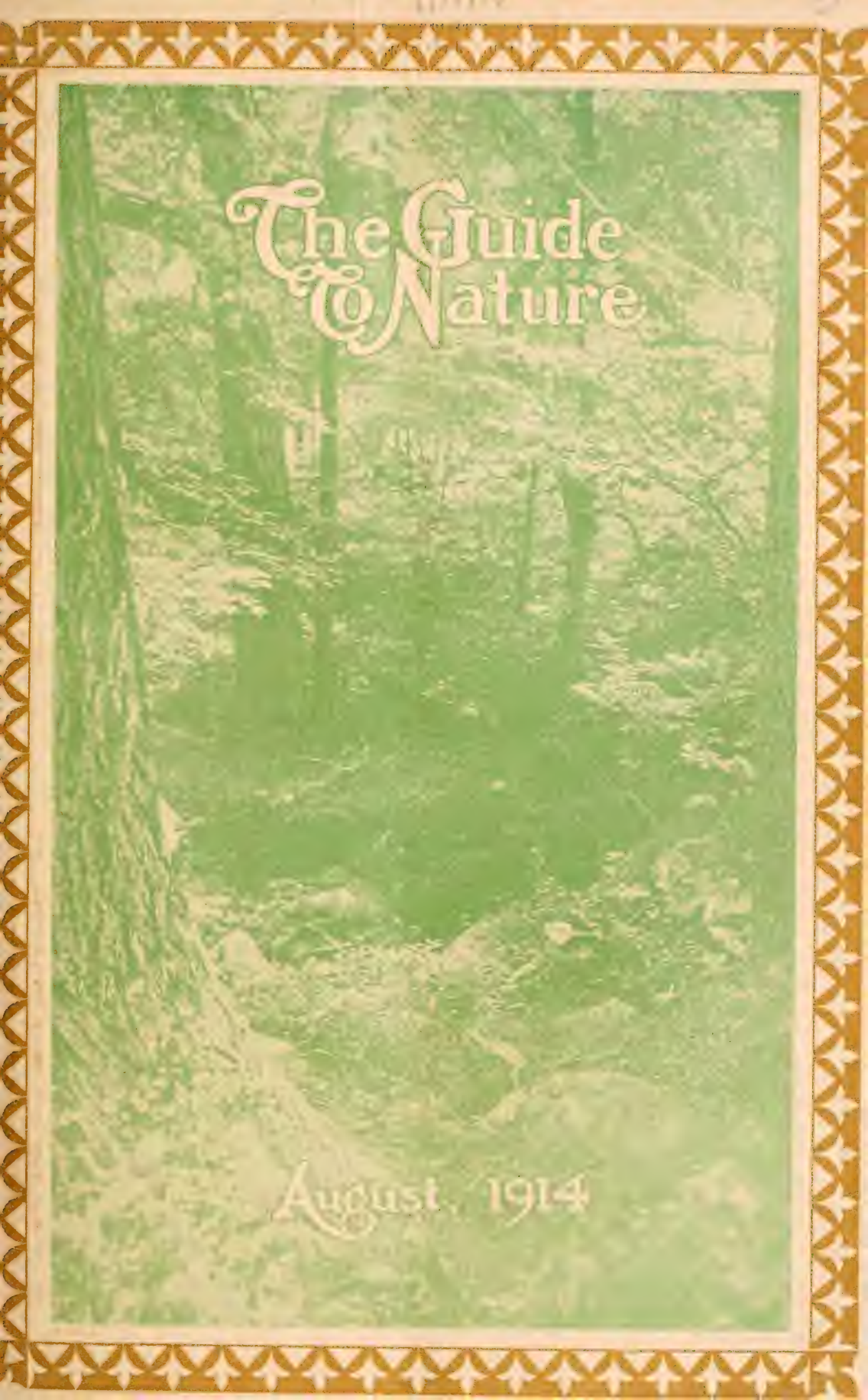
"When a world has been created and given over to us, so full of wonders, so full of beauty, so perfect in its finish, surely the least that we can do is to be interested in is make and in the manner of its working. Still more so when we remember Who made it."

---

**The Summit of the Years.** By John Burroughs. Boston: Houghton Mifflin Company.

In this latest book the author, a naturalist who is more than seventy years young, practices what he preaches when he says: "There is no other joy in life like mental and bodily activity, like keeping up a live interest in the world of thought and things. Old age is practically held at bay so long as one can keep the currents of his life moving. The vital currents, like mountain streams, tend to rejuvenate themselves as they flow. . . . . Nature is always young, and there is no greater felicity than to share in her youth."

The first two chapters—entitled "The Summit of the Years" and "'In the Circuit of the Summer Hills,'"—are to the reviewer by far the best though the others contain much of charm and instruction. It is evident that Mr. Burrough's interest in all nature increases as the years go by, while he admits that his special interest in birds decreases. We are glad to note that he is more and more actively living the fundamental principles of The Agassiz Association which takes into consideration not the point of view of a specialist but of one who puts himself in loving relation to all nature.


The Guide to Nature
August, 1914

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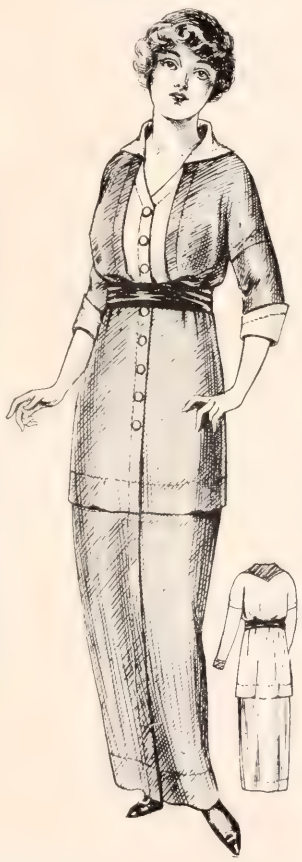
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### Studies in Boomerangs.

What is a boomerang? An instrument so curved that when thrown it returns and hits the thrower or makes him dodge.

* * * * * *

I recenty handed a copy of THE GUIDE TO NATURE to a Stamford business man. He looked it over casually and said: "I must admit that is a beautiful magazine, but I have neither time nor interest for such things. I am too busy earning enough to support my family. Price of everything one has to eat nowadays keeps going up. I don't know what we are going to do if all the farmers move to the city. Won't be enough to feed us by and by."

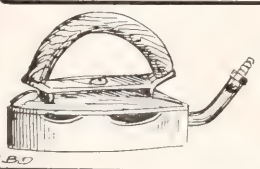
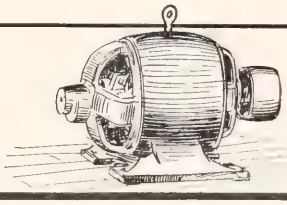
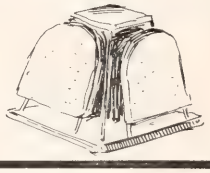
You are not interested in nature but you expect the farmer to be and to spend his life with her.

The increasing cost of things to eat is due to the decreasing number of those who get things first-hand from Mother Nature.

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The ultimate end of science, as well as its initial impulse, is the regulation of human conduct. To make right action possible and prevalent is the function of science.—David Starr Jordan in "The Stability of Truth."

# Our ARCADIA Page

## Life after Life.

*When Joaquin Miller, the picturesque "poet of the Sierras," died he left as his last utterance of faith to the world this poem of faith:*

Could I but teach man to believe,
Could I but make small men to grow,
To break frail spider webs that weave
About their thews and bind them low.
Could I but sing one song and lay
Grim Doubt; I then could go my way
In tranquil silence, glad, serene,
And satisfied, from off the scene.
But, ah this disbelief, this Doubt,
This doubt of God, this doubt of good.
The damned spot will not out

Wouldst learn to know one little flower,
Its perfume, perfect form and hue?
Yea, wouldst thou have one perfect hour
Of all the years that come to you?
Then grow as God hath planted, grow
A lordly oak or daisy low,
As he hath set his garden; be
Just what thou art, or grass or tree,
Thy treasures up in heaven laid
Await thy sure ascending soul,
Life after life—be not afraid!

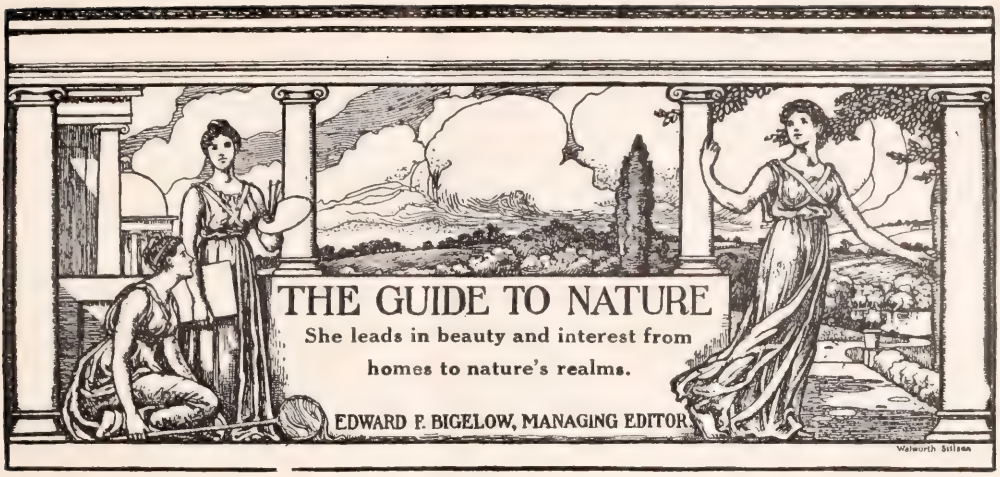
## An Attractive Guide to Nature is a Good Road.



STAMFORD GRINDS UP ITS DISCARDED STONE WALLS.



AND MAKES GOOD ROADS OF THEM.




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut

Subscription, $1.00 a year  Single copy, 10 cents

Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII  Guidance for **AUGUST.** Publication for July.  Number 3

## Turning Stone Walls into Roads.

To go from the city into the wild nature of the suburbs and surrounding country the first essential is a good road. Stamford is solving the problem of making good roads economically by grinding up the stone walls. It may not be known to all residents of Stamford just how extensively and economically this work is being car-



IT TAKES YOU DIRECTLY, ATTRACTIVELY AND EASILY TO WILD NATURE AND COUNTRY HOMES.

A Stamford road recently made of crushed stone walls.

Copyright 1914 by The Agassiz Association, ARCADIA: Sound Beach, Conn.



NOW A FIRM COUNTRY CROSSROAD WHERE FORMERLY SEVENTEEN AUTOMOBILES WERE MIRED IN ONE WINTER AND SPRING.

ried on, and certainly it will be of interest to our readers in other places to learn of the successful experiment of turning stone walls into roads.

Everywhere in New England there are plenty of stone walls but in many places there are not good roads. So, as the old-fashioned saying goes, why not let one hand wash the other; that is grind up a few of the stone walls and improve some of the roads? Far be it from us to advocate banishing all the picturesque stone walls, but there is no danger of doing that, for a few stone walls go a long way in making enduring roads.

Stamford is proud of its roads, but, of course that does not mean that all roads have yet been put in the most desirable condition. The work progresses every year and in the light of what has already been done the outlook for the future is favorable. The credit for this is in large part due to Selectman William R. Michaels for his untiring efforts in application of his knowledge of making an enduring road at least cost.

In the fall of 1909, on the recommendation of the Board of Selectmen composed of J. G. Houghton, William R. Michaels and J. J. Looney, the town, represented by Mr. Michaels, purchased a portable stone crusher from the Climax Road Machine Company, for $2,011. It is less than five years since the crusher was started on the Emmet L. Weed property in Springdale, Mr. Weed being the first townsman to donate stone for road construction. During these five years eight miles of durable stone roads have been built under Mr. Michael's supervision. Less than $500 have been paid for repairs on these roads, and most of this expense was incurred on Hope Sreet in the necessary repairs after the laying of gas and water pipes.

Hope Street, from North Springdale to the Glenbrook trolley junction, and Crescent Street and Courtland Avenue, Glenbrook, Newfield Avenue, Belltown Road and Oaklawn Road are among the Stamford roads constructed of native stone. Among those who have donated stone for these permanent roads are Messrs. Weed, Mathews, Toms, Raymond, Rothchild, Coe, Kerr and Robbins and Dr. Barnes, the latter being the largest contributor so far having to his credit many thousand tons from stone fences on his property.

The Oaklawn Road, the cross road not long since completed near the city limits, connects Newfield Avenue with North Stamford state road and is about one mile long. It is built with a traveled path sixteen feet in width and the ground stone was spread from twelve to eighteen inches in depth. All the stone from the Dr. Barnes property, together with tons blasted in the fields near the stone crusher, has been utilized in making this one of the most durable stone roads in the town of Stamford, so good a one in fact that the present Board of Selectmen are much pleased with the success in making Oaklawn a permanent road. With the completion of this and Belltown Road, Hope Street, Glenbrook, is now connected with practically a continuous crossroad near the city line that can be used with safety the year around whereas during the winter and spring before any work was done on this road as many as seventeen auto trucks were mired.

The Belltown Road has a traveled path twenty feet in width, with an average depth of ground stone of sixteen inches, and it is safe to say that for durability it will favorably compare with any macadam road in the town of Stamford. The length of this road is about two-thirds of a mile, and to put it in its present good condition required nearly three thousand tons of stone all of which was taken from the Barnes tract. So appreciative of this road are the residents of Belltown that after its completion they built at their own expense a waiting station near the trolley track.

The Newfield Road, much used by automobiles, was a problem on account of its wet condition. More than one mile was dug up in order to provide sufficient depth for an underdrainage of stone on which ground stone more than one foot in depth was spread in order to prevent heaving or buckling. Good drainage is an important factor in the construction of a road and if in the rebuilding of the Newfield Road such provision had not been made it would have heaved and rutted badly. Newfield Avenue is noted



AN ATTRACTIVE WAITING ROOM AT THE JUNCTION OF THE STONE WALL ROAD AND THE TROLLEY LINE.



THE ROAD WESTWARD FROM BELLTOWN TAKES YOU TO MOST ATTRACTIVE DOMAINS OF NATURE, AND APPEALS TO THE IMAGINATION.

for its fine view of Long Island Sound while riding over it in a southerly direction.

Notwithstanding the fact that the town has not a full equipment of road building machinery, the eight miles of native stone roads have been constructed at an average cost of $4,200 per mile, this amount including the price of the stone crusher. Since the annual town meeting of the year 1910, $5,000 have been appropriated for permanent stone roads and from $2,000 to $2,500 annually for the maintenance of the stone crusher. The above price per mile also includes the installing of drain pipe, the widening and rebuilding of stone bridges and the blasting of unsightly stone near the gutter line.

Mr. Michaels is a man familiar with the road conditions at all seasons of the year, and thereby eminently fitted for his task. He has made it a rule to engage stone in advance from property owners nearest the section of road needing improvement, thereby saving expense of hauling from a distance. After the Selectmen approve the Michaelizing of the road, work starts in proper season under Foreman Samuel Ferris, a thoroughly reliable and practical man and a road builder from boyhood. The engineer and other employees are worthy of commendation. That the town of Stamford can boast of its durable roads built of native stone at a low cost is due to the cooperation of property owners with this force of practical men.

---

### A Good Neighbor.

Why not neighbor with Nature, she's close at your door,
And her latchstring is out through the year;
She has all of the cardinal virtues, and more,
And would be all you wish, never fear.

Her domain is so wide, and her aspects diverse,
She would satisfy every taste,
Her ways would be soothing, and ne'er the reverse,
For she works without rest, without haste.

Pure enjoyment and growth would e'er go hand in hand,
If you put yourself under her spell;
You could wander with seeing eyes all through the land,
And your verdict would be, "It is well."

—Emma Peirce.

## An Interesting and Harmless Collecting Field.

BY EDWARD F. BIGELOW.

(From "Tree Talk," Stamford, Connecticut.)

When I advise the collecting of woods, I am commending a practice that I have pursued more or less during all my life. My earliest remembrances of collecting are that I cut with a new jackknife numerous pieces of wood. I cannot truthfully say that I was much interested in them from the naturalist's point of view; I do not know that I carefully studied the structure of the bark and the wood. What I really wanted to do was to show examples of good whittling with a new jackknife, and the variety of specimens within my reach appealed to me. But when I unconsciously and perhaps unintentionally made a collection of woods of various kinds—birch, alder, chestnut, hickory, and other kinds—I was laying a pretty good foundation for a later and more detailed interest in all our native woods. In fact, I am not sure but that that is one of the best ways in which to begin any study of nature. First do something, then see something, then say something. I am aware that nowadays we occasionally find naturalists who reverse this process. They say something regarding what they have never seen or done, and frequently the seeing is done through the eyes of other people. Ruskin says: "Hundreds of people can talk for one who can think, but thousands can think for one who can see. To see clearly is poetry, prophesy and religion—all in one."

It is a good thing to have an original relation to nature. Some one has said that there is a charm in seeing something that nobody has ever seen. Such special exclusive observing may easily be done by any one who will cut into wood. As the shavings fly and you bring your unaided eyes or perhaps a pocket microscope to bear upon the freshly cut surface, you are literally looking into something that nobody but old Mother Nature has ever seen before. It is a discovery for you in an unknown field, a peep for you into wonderland.

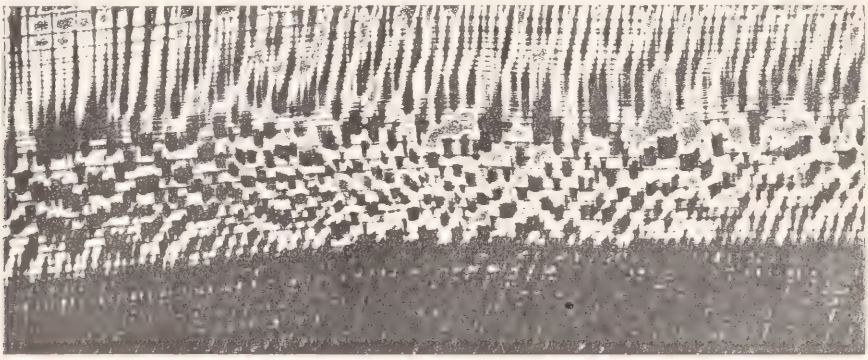
I especially advise the boys who would like to begin such a collection to get lengths of wood about an inch in diameter, with one end carefully cut square across. Slant the other end at forty-five degrees—that is, half a square. Shave the side of the wood in these pieces straight across and we shall obtain what is known as the transverse section; in the slanting we shall have the tangential; in the lengthwise the radial. This will show the wood as in the accompanying illustrations, in every possible manner, with the exeception of what the lumbermen call quarter-sawed—that is, from the heart out toward the bark, to show the medullary rays. These rays in some of the woods known to the lumbermen as quarter-grained, are extremely interesting and add much to the beauty and luster. This is notable in such woods as oak, sycamore, etc. The accompanying illustrations are taken from sections made by Romeyn B. Hough, of Lowville, N. Y. He has accomplished an untold amount of good by interesting people in our native woods. He is continuing the



TRANSVERSE SECTION, ACROSS THE GRAIN.

work originated by his father in cutting all kinds of wood with a special machine, in a manner similar to that of the biologist who in the laboratory

jection lantern, or his even thinner sections for study under the microscope. The slices are so thin that even the light of an ordinary lamp is strong



RADIAL SECTIONS BY CUTTING LENGTHWISE.

cut[illegible] small things by the aid of an instrument known as a microtome. Mr. Hough's machine cuts with [illegible] and [illegible] acquired [illegible]

enough to illuminate the tissues for study by the compound microscope.

[illegible] to Nature.

Every year we are nearer to Nature. This is an additional evidence, I think,



SLANTING CUT SHOWING TANGENTIAL GRAIN.

and wish to extend it they will find that Mr. Hough will gladly aid them with specimens of wood at a moderate price. These he supplies in a series of books, entitled "American Woods," illustrated by these actual specimens of woods, in the place of pictures, and far more interesting. He also supplies wooden cross section cards, very suitable for calling cards and especially for wooden weddings. Of absorbing interest are his thin transverse sections of woods mounted in lantern slides for showing characteristic structures on the screen by the aid of a pro-

of that highest discovery which the race has made—the immanence of God. For, were Nature *only* material, the human spirit would tend to outgrow it, and possibly to recoil from it. I mean, if there were any sharp line of opposition between matter and spirit. But, Oh, what arms encircle us; what throbs and pulsings in tree and river, in gravitation and atomic affinities and repulsions, blend with the beatings of our hearts and make us one organism with all that appears; one life with Him Who is the Life of all.—Elizabeth Whitney Brown.

## Lichens.

BY DR. AND MRS. ALBERT SCHNEIDER, SAN FRANCISCO, CALIFORNIA.

You have seen, on rocks and trees in wild places, certain flat, papery or leathery objects of various colors, that resembled you hardly knew what, unless you are a botanist. You have probably seen them too on soil, and so loosely attached as to become separated at the lightest touch, while some on the rocks, apparently hardly more than spots of color, seem almost imbedded; and on old houses and fences and in exposed situations generally at all seasons. These blotches are living, growing plants. They are lichens. Most fascinating plants they are too, because of their wide range and peculiar mode of life.

Sometimes rocks or large boulders are so covered with various kinds that they present a curiously mottled, often an encrusted appearance.

I remember hearing the driver of a stagecoach say, as he pointed to a well-known lichen hanging in festoons from the branches of a tree, "Yes, sir, that stuff up in those oaks will show you how high this river rises sometimes."

How much more interesting many a drive would be, if we knew a little more of the world about us.

Lichens are world-wide in their distribution. In the extreme north they form the most advanced outpost of vegetable life. They are found on mountain tops far in advance of other vegetation, and they abound in the hottest countries. They are the pioneers of the vegetable world, subsisting largely on what the wind and the rain can bring them.

They are most frequently seen on the weather side of rocks, trees, fences and old houses. This fact has been utilized by explorers and trappers to guide them through unfamiliar places. One kind grows on the leaf of the coffee plant, and one found in California grows on the boxwood leaf. Both probably derive some nourishment from the green part of the plant, and are therefore to some extent probably parasitic. A few are marine, occurring on rocks and rocky ledges that are submerged at high tide.

They seem to disappear before the advance of civilization, and are comparatively rare in parks, near dwellings and along much traveled roadsides. Some authorities say they are sensitive to noxious gasses smoke and dust. They are little affected by drought or changes in temperature. During dry weather or dry seasons they lie dormant, but with the first rainfall they change from brittleness to elasticity, and the colors brighten.

As distinguished from the mosses, to which they are not related, they lack



RAMALINA RETICULATA.

leaves and the characteristic green coloring. They are lower in the scale of plant evolution than the mosses.

A lichen is not a single plant unit as is the oak or the fern, but a composite organism made up of an alga and a fungus. The kinds of algae vary in the different lichens. Most of them, however, are the simplest forms, known as the single-celled algae. Most of the fungi belong to the group known as



BEARD MOSS (USNEA BARBATA).
A typically fruticose lichen showing apothecia. Quite cosmopolitan but variable in form, size and color.

sac-fungi, because they form their spores in little sac-like structures. The fungi are dependent upon the algae for their organic food, and the algae are protected by the fungi against loss of moisture, and supply to them certain necessary chemicals—a life relationship for mutual benefit; one supplies what the other lacks, making it possible for two organisms to thrive where neither could exist alone. As a result of this partnership, the lichens are wonderfully successful in the struggle for existence.

We must not confuse this mutualistic relationship with parasitism. In that there is also an intimate biological relationship, but one organism (the host) is injuriously affected, while the other (the guest) is benefitted. The host plant always thrives better without the parasite, as in the case of the oak and the mistletoe.

These plants exist in three general types or forms, fruticose, foliose and crustose. The fruticose are more or less branched and filamentous. The widely distributed beard moss *(Usnea barbata)* on trees, on oaks especially and less commonly on posts and fences,, is typically fruticose. The foliose (leaf-like) are thin, papery and flat, and are rather loosely attached to the bark. They are also found on rocks and fences. Iceland moss obtainable in drug stores is an example. The crustose appear to be mere discolorations.

Lichens are indefinitely perennial. It is probable that most of these on large mountain rocks, or on aged trees, are hundreds of years old. In the reindeer moss of the tundra there is a continuous growth at the top, while the basal portions are as constantly dying.

The growth of many is extremely slow, some taking years to arrive at the spore bearing stage. One variety has been known to grow for forty-five years before producing the spore bearing structures.

Any bit of lichen will develop into a new plant provided the part includes both partners. In fact a lichen dried so thoroughly that it may be powdered, will renew its activity as an indefinite number of plants, if the powder is scattered in a suitable place and kept moist. Furthermore there are special propagative organs called soredia, minute bodies composed of both alga and fungus and usually formed along the edges of the thallus. To the naked eye these clusters appear as slightly raised specks, or as a white fringe. The individual soredia composing these clusters are too small to be seen by the naked eye. Other propagative structures are the apothecia, small cup-shaped or dome-shaped growths about a quarter of an inch in diameter, and generally slightly raised, occurring on the surface in the foliose forms, and on the ends of the branches in the fruticose. In the lichen known as red cup moss, the bright red spots are the apothecia. These tiny cups belong to the fungal portion.

The following are a few of the more interesting species with a brief reference to their real or supposed economic value.

No lichen has been of greater in-

dustrial value than dyer's moss or dyer's fungus, which yields a dye known as orchil, cudbear or litmus. Orchil proper, a rich purple dye, is obtained from *Roccella tinctoria,* a species common in the Mediterranean countries, Western Mexico, Central America and in warm countries generally. The blue and the purple of the Old Testament (Ezekiel XXXII, 7) is supposed to refer to the dye obtained from this plant. It was also used by the Greeks and Romans, and was an important article of commerce. Other lichens yield various dyes. Cudbear, from Lecanora, is much used by the peasantry of Northern Europe for dying woolen cloth scarlet or purple. Many species yielding red, brown, purple and yellow dyes have been, and probably still are used as domestic dyes by the natives of the regions in which they are found. The coloring matter is in the acids contained in the plants, but little is definitely known of their chemistry. Another interesting form is the beard moss found chiefly on oaks. It hangs in beard-like tufts from the branches, and varies in length from several inches to several feet. It serves as food for certain wild animals, and also sometimes for domestic animals. During the early middle ages this "moss" was much used as a remedy for insanity, epilepsy and other nervous disorders, but to be efficacious it should be gathered from the skull of a criminal that had been left hanging on the tree.

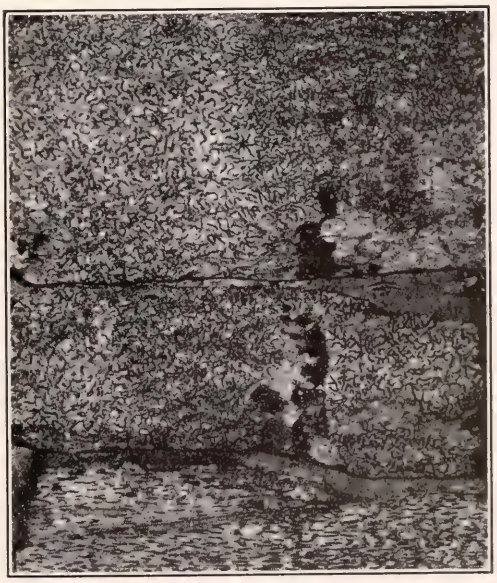
Reindeer moss *(Cladonia rangiferina)* is the chief food of the reindeer. Even the Laplander in time of need does not disdain to prepare it for his own meal. Of all the lichens this is doubtless the most useful. In winter the animals scrape away the snow, and feed upon this growth.

In recent years, in Scandinavia and Russia, alcohol has been distilled from reindeer moss. Formerly another lichen, *Sticta pulmonaria* (lungwort), was much used instead of hops in brewing. A certain Siberian monastery was celebrated for beer that owed its flavor to this lichen. A small greyish or nearly white lichen, known to botanists as *Lecanora esculenta,* and called in Western Asia "earth-bread," is believed by some to have been the manna of the Israelites. In times of drouth and famine, it has served as food for man and beast on the arid plains of Northern Africa, Eastern Europe and Western Asia. It grows unattached or very lightly attached to the ground in the form of irregular lumps, sometimes six or seven inches thick.

Iceland moss is still highly prized as an article of diet, especially by convalescents. The Swedish peasantry make a bread of it and it often forms the chief food of the poor Icelander. A lichen commonly known as "rock tripe" *(Umbilicaria)* has been used as food by hunters and trappers of the far North where these plants are abundant on rocky ledges. It is stated that the members of the Franklin polar expedition subsisted on this lichen for some time.

*Peltigera canina* formed the basis of a one-time celebrated cure for hydrophobia. *Ramalina reticulata* is another attractive lichen, known as "old man," "old man's beard" and sometimes "beard moss." It differs from the true beard moss with which it is often confused. The thallus branches are flattened while those of the true beard moss are cylindrical. It is abundant on oaks along the California coast. "Old man" is used for packing material, bedding for cattle and as fodder.

Lichens by an eminent botanist of long ago were called "the beggarly among plants." Like the poor they are always with us. The number of different kinds sometimes found on a



GRAPHIS SCRIPTA.

single boulder are surprising, as are the variety and number on fence rails and trees along the roadside. The representative species may be easily identified by the help of special books on the subject.

To one fond of collecting they will



A FOLIOSE FORM OF LICHEN COMMON ON SCRUB OAK ALONG THE PACIFIC COAST.

Note the numerous large apothecia. This is the "dark crottle" of the Scottish peasantry, by whom it was used to dye woolen stuffs brown. It was also used as a table or diet aid in the manufacture of a gum similar to gum arabic.

prove a joy, as no special drying apparatus is immediately necessary. At one's convenience they may be moistened, spread on drying sheets and mounted in the usual manner. It is well to remember that the lichen, like everything else, is most beautiful in its natural setting. If you do not need it for real and detailed study, let it remain where it grows. Too many plants find their way into the amateur collector's box. A real lover of nature is loathe to destroy or to take from its home any living growing thing. Far more important than the classification of any plant, is an appreciation of its beauty and fitness in the general scheme of creation.

### Contentment.

If you cannot have the mountains,
You must keep the hills in sight;
If the sea be not your portion,
Even a pond will yield delight.
You'd not miss the rolling river,
Should a stream flow near your door,
Or if only babbling brooklet,
What could mortal ask for, more?
It is not the fullest measure
That lustres the greatest joy;
If you cannot have the sunshine,
Find contentment in the rain.

—James Peirce.

### Out in the Open.

To the end that they may bring their sacrifices in the open field.—Leviticus, xvii., 5.

Undoubtedly one of the most salutary discoveries of modern medical science is that of the value of fresh air as an agent of general bodily health. In the old days we used to muffle up our throats to keep out bronchitis, pad our chests against consumption and sleep behind closed windows to escape the contagion of the night atmosphere. To-day all this is changed. The victim of a bad throat or weak chest is taught to expose the affected parts to the outer air as much as possible. The fresh air treatment of tuberculosis is now universal. The wise man sleeps in winter as well as in summer with every window wide open—or, still better, out of doors! To keep out in the open air is in our time the first law of health.

Now, very impressive is it to note that what is so true as regards the body is no less true as regards the soul. In the spiritual life, as well as the physical, we are learning the value of fresh air. No longer do we drive the tempted soul into the ways of solitude or separate the sinner from contact with his fellows. No longer do we regard the monastery as the refuge of virtue or the dark silence of the hermit cell as the cure of spiritual corruption. We know to-day that retirement is dangerous and active life in the outer world always beneficial. If a man is overweighted with cares or beset by temptations or stricken with some loathsome moral cancer let him flee from the lonely chamber where he knows only dull brooding and sterile remorse and desert the towering altars where he makes confession and does penance. Let him take his anxiety or sin into the open air. Let him go down to the sea, and look unto the hills. Let him heed the skylark, and dance with the daffodils. Let him, in a word, hold "communion with Nature in her variable forms," and lo! his cares will fall from him like a ragged garment and his sin vanish away as a little thing. The air will make him pure. The sun will give him light. The shining firmament will lift him to its own expanse of beauty.

And if it is beneficial thus to bring our ills under the influence of Nature, how much more beneficial still is it to bring them under the influence of our fellows! What unworthy thought can flourish in the presence of a good man, or what ignoble motive survive the grace of a good woman? How shall we maintain our petty envies and deceits in the face of little children, or keep our selfishness alive amid the sweet influences of comradeship and family love? Where is there is cruel passion or secret sin which is strong enough to resist the wholesome impulses of the crowd? What we need, if we would keep our souls free of all unhealthiness, is simply the open air—the open air of rubbing elbows, clasping hands, making friends, knowing people, "going with the multitudes"—above all, of seeking the near companionship, if possible, and the distant influence, if nothing better, of men and women who are stronger, braver, purer than ourselves! To know men, to love men, to work with men, to live with men—to know the grace of brotherhood and the joy of fellowship—this is the first law of the spirit.

Out in the open, therefore! Away from solitudes and silences—from windows closed and doors barred against the world! And lo! it shall be seen that strength and beauty are the sanctuary of the soul as well as of the body.

JOHN HAYNES HOLMES.
Church of the Messiah, New York city.

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Right action is the final purpose of science, and in like fashion and in the same degree the acquisition of truth is the crowning glory of human endeavor.—David Starr Jordan in "The Stability of Truth."



"CRADLED BY BANKS EMBOSSED WITH STARRY FLOWERS."

# Ode to the Savannah

By T. E. Oertel, Augusta, Georgia.

O fair Savannah, Daughter of the hills,
From out whose ample breasts a thousand rills
Leap into being and lift up a song
Of limpid music as they flow along;
Cradled by banks embossed with starry flowers,
And guarded by great oaks whose fragrant bowers
Temper the sun's hot rays; where stately pines,
Austere and crowned with wild muscadines,
Spread their Aeolian harps to woo the wind,
The crystal waters hurry on to bind
Themselves in sweet communion and to be
Parcel and part of thy divinity.

Immeasurably old, yet young forever more,
You fret the margins of the enduring shore
Into new patterns of fair tracery, or throw
Garlands of foam upon the sands below
The rocks that stubbornly impede thy path,
Wrought more in playfulness than in thy wrath;
You may not loiter long upon the way,
Your destiny supreme you must obey;
One great compelling purpose doth control
Your onward movement like a mighty soul;
To escape the restraining shore, to be set free,
And merge into the everlasting sea.

Servant thou art to things both small and great,
The very dews of heaven that consecrate
The fertile fields and woods of thy domain
Are of thy flood; the sun doth not disdain
To mate with thee, each flying cloud doth prove
The constancy of his desire and love.
Far from his northern home upon thy breast
The pied loon sinks his weary wing to rest.
The lordly cypress rears his head on high,
Fit monument unto thy ministry.
Resplendent reed and plum'ed grasses bless
Thy banks with ever-verdant loveliness.

Bearer of burdens, thou! The fairy boat
Of brier rosebud on thy tide doth float,
As light as thistledown upon the wind.
No more to thee the bulk of ships that bind
The capitals and marts of every land,
And weave a fabric with a magic strand,
At man's behest, obedient to his will,
You humbly turn the spindles of the mill,
Or with the power of a giant hand,
Subdue the thunderbolt to his command.
In thee beneficence and strength do blend,
All hail! Life-giver! Benefactor! Friend!



"YOU FRET THE MARGINS OF THE ENDURING SHORE
INTO NEW PATTERNS OF FAIR TRACERY."

### The Ideal Rural Teacher.

The teacher in the past, often city-bred and educated, has made the great mistake of bringing the curriculum of the city schools to the country. The children have unconsciously been taught a contempt for country life, and have gradually grown away from the soil. The twentieth-century teacher sent to rural schools will represent a vastly different type from her predecessor. She will teach the children how to live in their rural surroundings with enjoyment as well as profit. She will literally bring the farm into the school. It will be the nucleus about which all nature studies will revolve. She will not strive to bring the artificial interest of the city to these country children, but she will develop healthful interests right in their midst.—Suburban Life.

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No advance in real knowledge has come from guessing, or dreaming, or speculating, unless guesses or speculations have been based on previous experience, and unless evidence in each case is amenable to the test of action, and have been submitted to it.—David Starr Jordan in "The Stability of Truth."



[illegible] CRIED [illegible] HOOD [illegible] WITH [illegible] HORNED.

### Interesting Habits.

One with the right sort of interest in birds should find their every way and action interesting. The very fact that a given habit is altogether ordinary gives it the value of that fact; and facts of all kinds are what we want. There is a peculiar interest in seeing the odd, the grotesque, the abnormal; but the main point to be observed about even these special cases is the fact that they *are* odd grotesque, abnormal. I once saw a pure white crow, which could speak English. Now, there is practically nothing more to be said about that individual. On the other hand, who volumes will still be written about common, black crows which speak only plain Crow!

However, it is one of the many claims the birds have to our attention that in the usual course of their daily lives they do, more or less habitually, many things which make a special appeal [illegible]. The instances selected for mention in this article are merely typical of the numerous interesting traits of birds in general.



A TREE SWALLOW SHAKING WATER OUT OF PLUMAGE AFTER BATHING.



LOGGERHEAD SHRIKE FLUTTERING TO SCARE PREY OUT OF BUSHES OR TO INTIMIDATE IT.

This is the season in which to find pied-billed grebes in quiet waters such as old mill-ponds. Watch one of these "hell divers" closely from a place of concealment and you may see some

queer actions, such as swimming half immersed in an upright position, "sun-bathing" in the water, with outstretched wings; flying over the water with feet dragging or flopping in a remarkable way.

A point to note is whether or not a given habit is peculiar to the species, shared by the family to which the bird belongs, or is common to a still wider circle of birds. A man who knew well most of the commoner birds of his locality once told me of seeing a "curlew." He said "I knew it by its habit of holding its raised wings high over its back after alighting." Now, that habit is common to various species of the curlew's family; it is strikingly displayed by the Bartramian sandpiper. As I knew the latter bird, and not the curlew, was to be found in my friend's locality, it was in all probability this sandpiper which had been seen standing with raised wings as described. Another habit which is general in a family of birds is bathing on the wing, as done by the swallows, for various other birds may be seen to infrequently to dip in the water as they fly over it. The swallows' extraordinary mastery of the air allows them not only to feed, drink and rest on the wing, but habitually to bathe and fluff out their wet plumage as well with the support of their wings alone.

Of the birds which catch small prey such as mice, sparrows, beetles and



THE BARTRAMIAN SANDPIPER HOLDING WINGS HIGH OVER BACK AFTER ALIGHTING.



BOBOLINK FLYING WITH LEGS DANGLING.

grasshoppers I have seen in only one, the habit of fluttering the wings in a peculiar way, apparently for the purpose of intimidating the quarry or starting it from its hiding place. It was a shrike which I saw do this while it looked intently among the bushes beneath it. This suggests a question: May it not be possible that the spectacle of the hovering kingfisher often confuses, rather than drives away, the fish it seeks below it?

The habit of flying with legs dangling conspicuously is one displayed by a number of birds of widely separated families. With the rails it is much of a family trait but among blackbirds and their close allies it seems

peculiar to the Bob-o-link; while, of warblers, only the Yellow-breasted chat strongly exhibits it.

Strutting, so conspicuously indulged in by the peacock, roosters and turkey gobblers, is a very bird-like habit.



AN ENGLISH SPARROW STRUTTING.

Certain wild drakes strut through the water with all the pomp and ceremony of the pheasant tribe. Did ever any peacock outdo the vagabond English sparrow in lordly, prideful, boastful strutting? See him in the gutter, his plumage black with coal dust, filthy with every form of city dirt, yet by that up-turned bill and eye, that raised expanded tail, those outthrust elbows, that puffed out breast, in short by his whole manner before the one he seeks to win, saying, "Solomon, in all his glory, was not arrayed like me."

EDMUND J. SAWYER.

### The Unphotographed Bird.

The funniest, queerest, most interesting and clownish bird that we have is the yellow-breasted chat. I know of no other that equals it in interest. Correspondence with several expert photographers brings the information that they have never succeeded in photographing it. Mr. Frank M. Chapman writes: "I know of no photographs from life of the yellow-breasted chat." Here is an unexplored country, astonishing as the fact may seem. The yellow-breasted chat, in many respects our most interesting bird, has never had its photograph taken, while there is a multiplicity of photographic studies of other wild birds and their nests. Who will be the first to secure a picture of the clownish chat?

### Holding a Live Humming Bird in Hand.

BY CAROLINE CROWNINSHIELD BASCOM, SENECA FALLS, NEW YORK.

Those who have never held a humming bird in their hands have lost a great deal of pleasure, but there is a treat in store for them.

One day just as I was starting with a glass of punch for an invalid, a message came from her to come posthaste as she had a bird for me to doctor. When I reached her house, I found the dearest little hummer you can possibly imagine. It had flown into the kitchen and was too frightened to find its way out. It had beaten its tiny wings against the walls and poked the ceiling with its long, needle-like bill until it fell to the floor exhausted. When I took the wee morsel of exquisite green feathers, shimmering with gold, into my hand, I thought that speck of a heart had beaten its last and that I was too late. I asked for a teaspoonful of water, then ran the bill into the water, also putting drops on its head, and soon I saw the bill open a very little and the tongue come out. After a few minutes the tongue ran out and in just like a snake's and it took a few drops of water. The eyes opened and next came a welcome peep. It was very weak but I knew then it was alive and I might save it. I offered it some punch, which it seemed to relish more than the water, and it put new life into its diminutive body. In a few moments it apparently seemed well, so I took it home to show to my mother. I let it fly about her room to see if its wings were all right. As it was a full-grown bird, I felt that I must not keep it and that I had better take it back for fear it might have a nest near-by. I took it out into the back yard and pressed my lips against it. It perched on my fingers a few seconds, lifted those tiny wings and, instead of flying to a bush or tree as I expected it would, it went straight up into the heavens. We watched it until the naked eye could see it no more. It was the most beautiful as well as the most wonderful sight that I had ever seen.

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Kind nature is our friend alway,
Our friend by night as well as day;
The stars are eloquent of care,
Her seal is on the very air.
—Emma Peirce.

### Conducts a Bird Hospital.

Miss Caroline Crowninshield Bascom, 19 Green Street, Seneca Falls, New York, is known to many ornithologists, and to the general public in her vicinity, for her love and care for stray and wounded birds, cats, dogs, or in fact any other form of animal life. Her home is really a hospital for animals, with special conveniences for injured birds. She has recently published a book entitled, "The Bird Hospital." She thus explains her purpose:



MISS BASCOM TEACHES CATS AND BIRDS TO BE FRIENDS.

"I especially wish to teach children never to harm in any way our feathered friends but to love and be kind to all living creatures God has put upon earth. He has never put anything here that has not some use no matter how some may fear and hate the lower animals. Never hurt anything and only kill when it is necessary and then do it in the quickest and most humane way.

"I find animals want to be treated very much like children. The more intelligent they are the easier it is to influence them and the quicker they



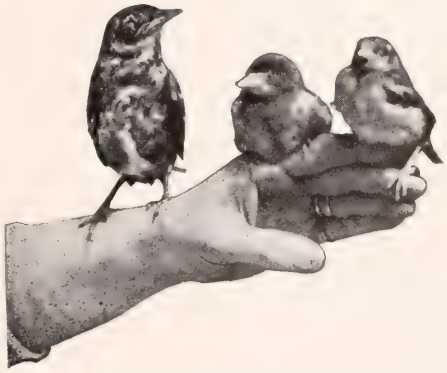
THEY AGREE TO LIVE IN ONE HOME.

are to read you. First give them a great deal of love and kindness, always be firm, very patient, and above all NEVER deceive them in the most trivial thing."

An interesting outcome of her care for invalid birds is the resultant affection that is invariably displayed for her by her proteges. Miss Bascom has recently entered the lecture field and is giving illustrated accounts of her pets and their pranks. We cordially commend her example, her work and her lectures to all who are interested in any form of animal life.

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In youth, this need of direct contact with truth should be the justification for nature-study. In manhood, this should be the inspiration of scientific research.—David Starr Jordan in "The Stability of Truth."



FRIENDLY BIRDS ON MISS BASCOM'S HAND.

# ORNITHOLOGY

### The Audubon Monument in Trinity Cemetery.

New York City.

To the Editor:

Replying to your request for information with regard to the Audubon monument in the Trinity Cemetery on 155th Street, I would say that the idea of erecting a suitable monument to this celebrated ornithologist seems to have originated with the late Professor Thomas Egleston in 1885. Acting on suggestion from Prof. Egleston, Professor Daniel S. Martin laid the proposition before the American Association for the Advancement of Science at its meeting of August, 1887. The Association took no action, however, and in October, 1887, Professor Martin laid the matter before the New York Academy of Sciences; and a committee consisting of Thomas Egleston, Chairman, N. L. Britton and D. S. Martin was appointed to raise the necessary funds and to have charge of the whole affair. You will find the history of the undertaking as prepared by Professor Egleston in the Transactions of the New York Academy of Sciences, Volumn 13, page 41.





SECTIONAL VIEWS OF THE AUDUBON MONUMENT.

At first the committee planned to raise the subscription national in scope and circular letters were sent out over the country asking for contributions, but it soon became apparent that the results of this campaign were so meager, necessary that after several months of effort it was abandoned and attention was turned to raising the money by securing a smaller number of large subscriptions. In the end $10,375.21 was raised by subscriptions coming from one individual including a few Audubon societies and other naturalists' societies and a few firms.

After all expenses had been met a balance of $1,797.25 remained in the hands of the committee. This balance was turned over to the Treasurer of the New York Academy of Sciences to form "The Audubon Publication Fund," the interest on which should be devoted annually to the publication of a memoir on some zoölogical or botanical topic, if a paper suitable for such a memoir should be presented. If no such paper should be presented during any one year, the interest was to be allowed to accumulate until one suitable memoir could be prepared. The income has accumulated to date until now it amounts to nearly $1,200. The committee is following the policy of allowing this fund to grow until it is large enough to furnish an income which would provide for the publication of a big-sized memoir when such a memoir is presented.

Very truly yours,

E. O. Hovey,

Recording Secretary.





IN TRINITY CEMETERY, NEW YORK CITY.

## An Experience with the Brown Thrasher.

BY MANLEY B. TOWNSEND, NASHUA, NEW HAMPSHIRE.

Most of us usually consider the brown thrasher a wild, shy bird. And such he is, under ordinary circumstances. But individual birds vary greatly, perhaps as widely as human beings. No two birds are exactly alike in form, color or disposition. Neither are any two human beings.

Several years ago, when living at Sioux City, Iowa, in the Middle West, I had a rather remarkable experience with a nesting brown thrasher. The nest was located in a small spruce in a cemetery where nested a number of interesting birds, among them the bob-white, orchard oriole, Arkansas kingbird, bronzed grackle, flicker, yellow warbler, warbling vireo, mourning dove, catbird and others.

When discovered and approached, the bird clung closely to the nest and refused to leave, even when my hand was placed directly over her. At first she showed fight, picking at the hand with sufficient force to draw blood. Gradually, however, she became accustomed to my presence and at last sat contentedly on her precious eggs while I stroked her from the top of her head to the tip of her tail. Eventually she developed the greatest friendliness, and sat and ate worms from my hand, or took them to feed to the young birds.



THE NEST OF THE BROWN THRASHER IN A WILD GOOSEBERRY BUSH.



"SAT CONTENTEDLY ON HER PRECIOUS EGGS WHILE I STROKED HER."

One of our party put numbered aluminum bands on the legs of the young to ascertain whether or not they would return to their native home. The next spring the birds with the bands were back again and nesting in the same cemetery.

The brown thrasher, or brown thrush as he is commonly called, is in every way a splendid bird. Beautifully dressed, slim and trim, in long-tailed brown coat and polka-dotted waistcoat, a songster of wonderful vocal accomplishment, rivaling the famed mocking bird, of which he is a cousin, and vastly helpful to man as a destroyer of noxious insects, he deserves the affection of every lover of beauty and the gratitude of every one that values the birds as an economic asset in the "balance of nature."

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## Watering Birds and Observing Caterpillars.

Red Bank, New Jersey.

To the Editor:-

One of my friends said to me the other day, "Why don't you build a house on that back lot of yours and rent it?" I said, "I would not live on the place if a house were already there."

My home is on a lot that is well grown up with bushes and small trees. Most of the birds in the neighborhood stay about the place. I can look out at anytime in the winter or the summer and see birds. In winter there are the sparrows which everybody



A BIRD HOME AND BATHING AND DRINKING ACCOMMODATION.

has, and the starlings which in a year or two will be as common.

If one is at all interested in the things that fly and crawl in the great out-of-door, it is remarkable how many may be seen in one's own yard. Last year we had several pairs of robins, a pair of wrens, a pair of catbirds and several pairs of song sparrows. These in addition to the English sparrows and starlings, made the place pretty lively all through the summer and the early fall.

The only special accommodation that I make for my little friends is to put two earthen dishes on a fence post and keep them full of water. The birds take a bath and then take a drink; this is somewhat contrary to the sanitary rules, but it seems to suit them.

There is no end to the bugs, worms caterpillars and all sorts of things to be found on the place. Here is a common tomato worm that has had a visit from a little fly. A result of the visit is that the worm bears about many cocoons in which are pupæ. These cocoons, after a time, open on the outer end and the little fly that has been hatched within walks out, stretches himself, rubs his wings against each other and flys away, having no further use for the worm, which lives but a short time after the last fly has gone. If you happen to see one of these infested worms, examine the cocoons with a magnifying glass from time to time and you may be able to determine the method by which they open.

A. R. Coleman.

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In the forest's depth are more than trees,
On the hilltop much beside the breeze;
At the shore we look beyond the seas;
It is what we bring, we find in these.
—Emma Peirce.



"A COMMON TOMATO WORM THAT HAS HAD A VISIT FROM A LITTLE FLY."




### Lured by Sweetened Water.

The manager of a little circus [illegible] ing the San Joaquin Valley, California, was careless enough to allow three performing bears to slip out of their cages and roam about the countryside.

Fortunately the only weapons that happened to be available were shotguns charged with bird shot, so that when the ranchers went forth to do battle with the invaders the Bruin family was only tickled with a few little lead pellets.

Meanwhile the manager appeared and quieted the fears of the populace, explaining that the wild animals were only trick bears and were not likely to do any serious damage. His main worry was to get them back to their cages. An acquaintance of his who [illegible] automobile hit upon the expedient of finding the bear trio professionally engaged in the show, where they sat around a table and drank huge quantities of sugar and water from beer bottles. The automobile owner loaded up his tonneau with as much of the sweet mixture as he could find, threw in the clutch and sallied forth to the neighborhood where the bears were enjoying their liberty. All three of them were enticed into the automobile where they sat up as if the show were on and poured gallons of the delicious beverage down their hairy throats.—Robert H. Moulton in "Our Dumb Animals." Cut by courtesy of F. Y. Miller, London, Ontario.



A QUARTETTE OF "HARD" DRINKERS OF SWEETENED WATER.



A SPIDER'S WEB OVER FOUR FEET IN LENGTH.

### A Huge Spider Web.

As I have watched the building of a spider's web two things have greatly impressed me—first, the quickness with which a spider will construct a small web, and secondly, the enormous extent to which some webs may be developed or constructed by their laborious builder. By actual observation I have ascertained that a complete small web may be built in fifteen minutes, while on the other hand there are webs so extended, as is shown in the illustration, that they must be the result of weeks of steady attention and growth. The web here shown measures a little more than four feet in length.

### Bat with Nursing Young.

A remarkably interesting natural hi tory specimen was recently brou to ARCADIA by Mr. J. Willis Y 65 Fairfield Avenue, nnecticut. He had found whose breast two very youn were clinging. I took several pho graphs of the unusual group, and thought what an interesting thi will be to show to our chloroform the three and have them prepared by a taxidermist a ranged on the branch of a tree that purpose I obtained a glass jar, some cotton and a bottle of form, but then my conscience woke up, and began to stab me in so many places at once, that I changed my intention. I took the mother with her little ones still attached and placed them on the veranda as high up as possible and out of the way of cats and other possible prowlers. There they



A BAT WITH TWO NURSING YOUNG.

hung until the twilight fell some two hours later. When I went out after dusk, I found only one little one on the veranda. Half an hour later, that one was gone. The mother had removed them one at a time, as a cat would remove her kittens. I had wondered how that little mother could fly and carry those two young bats. She did not. She took one away, placed it in a safe place, and returned for the other which apparently remained quiet and obedient where she had left it.

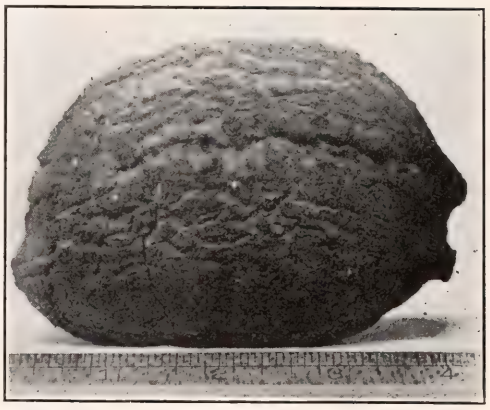
### Only Entomological Knowledge.

A kindergarten teacher in one of the Stamford schools, thinking that she would introduce a little nature study, proposed to give a series of talks on the subject. She selected what she regarded as an interesting topic; namely, honeybees. To make her talk clearly understood and to enlist the interest of the children, she showed pictures of honeybees, inquiring who could tell what kind of insects they were.

There was an unanimous shout, "Cockroaches." It seems evident that their investigations in entomology had not proceeded much beyond the limits of the home, since cockroaches are the only insects that they know.

### Indian Bread or Tuckahoe.

I am today mailing you a perfect specimen of the fungus, Indian bread or tuckahoe (Pachyma cocos), which, as you will see, has formed about some



THE INDIAN BREAD SUGGESTS A COCOANUT.

dead root, probably oak. This is a small one but perfect. I have one as large as a man's head, but it is injured slightly by plowshare. They are usually found in new ground clearings and form on oak and hickory roots mainly. I have found them in all stages of growth and it is very interesting to note how the growth forms among the cells of the half rotten wood and pushes them apart, farther and farther, till the brown color of the wood changes to gray and eventually is entirely lost and not a trace can be seen with the naked eye, and the whole appears chalky white, and one would never suspect there had ever been a root there were it not for the ends protruding as in this one.

C. E. Pleas,
Chipley, Florida.



THE INTERIOR OF THE INDIAN BREAD.

### A Spider Kills a Snake

BY HARRY BEELER, PHILADELPHIA, PENNSYLVANIA.

A snake in the bushes, seeing a nice, fat, juicy meal in the form of a spider, made a spring toward her and landed in the spiders web. This held him entangled. As quick as a flash of lightning the spider attacked the snake, and stung him with her poison fangs. Before he could escape from the web, the snake, in a few seconds, died. The spider scored a great victory.

The grasshopper that you see in the web is only a shell, the spider having absorbed the contents.

The snake was about six inches long; spider two inches, including the legs. The web was two feet in circumference and very strong. The color of the spider was black and yellow. The snake was brown.

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The garden spider often vibrates her web many times when it is touched.

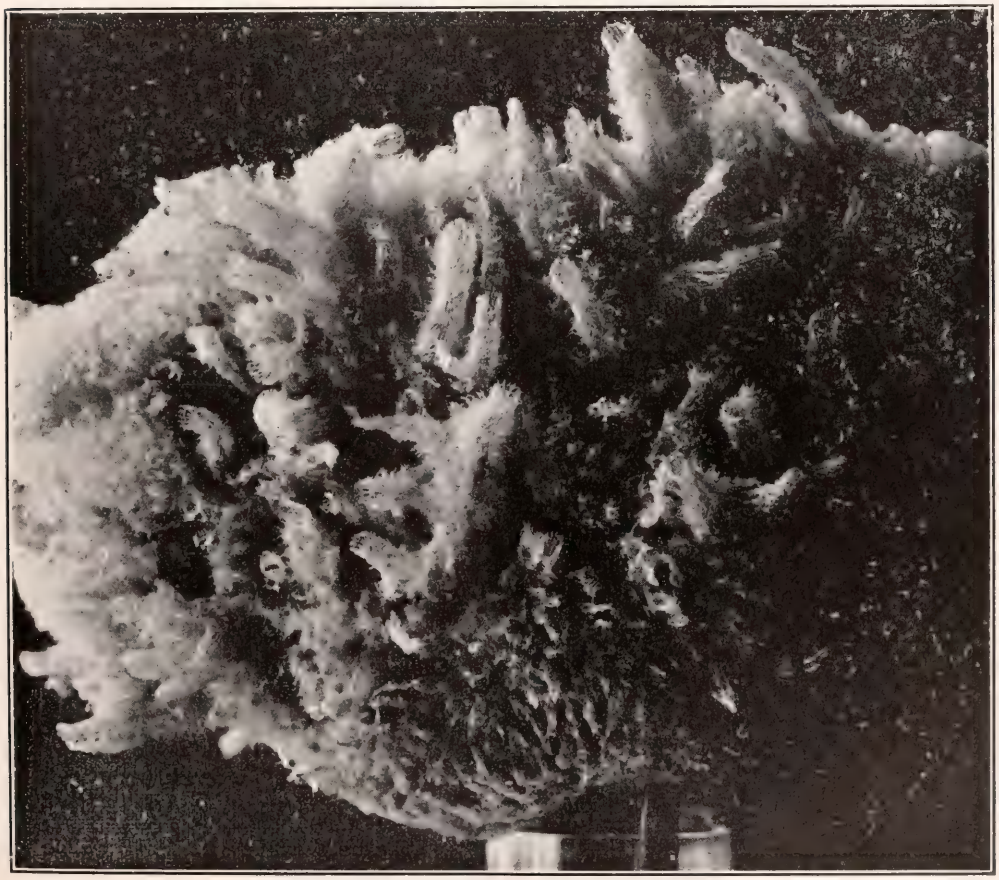


A SNAKE KILLED IN SPIDER'S WEB.

### The Tubular Growth on Sponges.

Stamford, Connecticut.

Dame nature appeals to us from odd nooks and corners sometimes. Even



CURIOUS TUBES ON A SPONGE.

the photographer's dark room is not free from her appealing ways. The enclosed prints are from a piece of sponge that I bought from Lockwood & Palmer for my dark room work. When I went to use it I found it had not been "trimmed." It shows the tubular growth very clearly. Each tube resembles that marine curiosity, "Venus' work basket." Perhaps you may find a place for its photograph in your magazine.

Sincerely yours,
G. B. WINDSOR.

## Anthracite Fossils.

BY C. D. ROMIG, AUDENRIED, PENN.

These fossils and specimens are directly connected with the formation of anthracite in and around Carbon County, near Hazleton, Pennsylvania, the middle coal field as it is called.

The pebbles are commonly called potato stones on account of their general shape which is somewhat like that of a potato. They vary in size from that of tiny pebbles to that of large cobblestones. They belong to the conglomerate rock or pudding stone which in substance is a mass of these pebbles cemented by nature into a mixture of sand not unlike our present day composition of stones and sand with cement in the rough.

These conglomerate rocks are almost everywhere in evidence throughout this part of the coal field, ranging in size from that of a boulder to that of a fortress, between Mauch Chunk and Wilkes-Barre, Pennsylvania, at a height of from 1,200 to 1,900 feet above sea level, they are very common. House rocks is another term used in speaking of these conglomerate rocks, perhaps because they often resemble houses in the distance. Some of these rocks afford considerable shelter from storms while others give no protection whatever. Some stand up like an old piece of masonry, others are tumbled about like toy blocks. There are many interesting and fantastic shapes among these conglomerate rocks, and from their summit many good views may be obtained. The sheltering kinds could tell some interesting stories about man and beast, and there are occasional traces of Indian occupation. Stone implements, and once in a while pottery, generally in fragments, are



A LEAFLET OF A FOSSIL FERN, PRONEPTIS HOOKERI.

The impression shows the leaf rounded, crumpled when the middle coal bed was a tropical swamp of these plants. They are abundant in the carboniferous shales of the Coal Measures.



A SECTION OF THE TRUNK OF A LEPIDODENDRON.

The diamond-shaped scars represent the [illegible] of the leaves and the dots the positions of their insertion.

found beneath these rocks which, like the pottery, are gradually crumbling.

Fossil impressions are, we may properly say, compressed vegetation, being a part of the composition of coal, which did not get into the mixture which formed the coal. These specimens run soft, medium and hard, and we might say that the harder they are the nearer they are to coal. The coal veins lie above one another, separated by certain layers of rocks, and the fossils are found in these rocks and coal seams. Some fossils are close to the surface but generally this rock is soft.

Besides these impressions, petrified trees of immense size and perfect in shape are occasionally found. There are miles upon miles of tunnels and excavations in this coal field and many specimens are consigned to the dump where they become hidden again by being covered up.

Pyrites and crystals are found in the coal mines, the former a cube, six-sided and often perfect, the size being from that of a pin head to more than an inch. These are also often in clusters of cubical forms, symmetrically combined, and are much worn as jewelry being generally called sulphur-diamonds. Crystals are generally in clusters and some specimens are beautiful. The pyrites here is decomposed and as such is generally called fools' gold.

Fair nature's charms are ever free,
And better still, are ever near;
To all the open sesame
Is "Eyes to See, and Ears to Hear."
—Emma Peirce.

## Some Trick Photography.

Chester, West Virginia.

[illegible]:-

The picture of the boy in the bottle was made in the following way. The boy was placed [illegible] with a [illegible] and [illegible] a black background. The position was carefully marked on the ground glass, and the exposure made. The plate was not developed, as it had to be again used for the bottle. I placed the bottle on the box, raised the box to a convenient height, and again covered it with the black cloth. The image of the bottle was arranged on the ground glass so that the interior was



HOW DID THE BOY GET INTO THE BOTTLE?

large enough and in the right place to include the boy. A second exposure was made, and the plate developed in the usual way. The background should be large enough to extend to at least a foot on each side of the boy, and for two feet above his head.

The picture of the boy on the rooster I made by pasting a picture of the



TAKING A PHOTOGRAPHIC RIDE.

boy on a picture of a rooster. The rooster, a large blue game, was placed on a box in front of a white background and made to stand erect by getting a friend to hold another rooster in front of him. When he was about ready to strike, I snapped the shutter which was set at one-fiftieth of a second. The plate was developed and two prints made. One print I trimmed till I had a rough outline of the rooster. This I put on the ground glass and made a rough sketch with a pencil. The boy was placed astride of a carpenter's horse which was covered with a black cloth in front of a black background, and so arranged on the glass that his image was the right size and in the right position on the rooster. This was easy since I had an outline marked on the glass. The string used for a rein, one end the boy held in his hand while the other was pinned on the background. Then an exposure was made and one print from this negative. The print was trimmed until only the boy, whip and rein were left. These were pasted on the other print of the rooster, copied, and the plate developed and printed in the usual way.

FRANK GRAFTON.

## Nature-Study and Teacher.

We ought to study Nature just from books,
is what I say;
It does not do for Teacher dear in any other
way.
Because when once I found a spider, brown
and very fat,
And brought him carefully to her in my best
sailor-hat,
My teacher cried aloud in fright, and squealed,
and took on so,
I had to hurry to the door, and let my spider
go.

One time, I found the finest kind of long,
soft, fresh green worm;
But, my! you ought to see the way it made
my teacher squirm!
Then on her desk I put a snail, a harmless
little thing
That would not hurt a bit, because it could
not bite nor sting;
But when it came half-way from out its shell,
and tried to crawl,
The noise my teacher made they say they
heard across the hall.

Another time, a baby mouse I brought her in
a box.
She gave a look, and then a scream that folks
could hear for blocks.
I thought she'd like to see a snake; and
brought one in a pail;
But Teacher yelled a lot, and would not even
touch its tail!
So, Nature-Study in a book is all that she
can stand,
For when it comes to *samples,* Teacher hasn't
any sand!

—BLANCHE ELIZABETH WADE,
in "St. Nicholas."

## Invitation.

The woods are calling, calling,
These perfect summer days;
The waters falling, falling,
Proclaim their joyous ways.

The birds are singing, singing,
In all the leafy bowers,
The insects winging, winging,
Their way in gauzy showers.

The flowers are blooming, blooming,
In every tint and hue;
The mountains looming, looming,
In distant, misty blue.

Let us go peering, peering,
For undiscovered gold,
And end by cheering, cheering,
For Nature manifold.

—Emma Peirce.

### Photograph of Huge Petrified Stump.

Cripple Creek, Colorado.

To the Editor:

I send you a photograph of a petrified stump in the so-called petrified



THE PETRIFIED STUMP.

forest situated in Teller County, Colorado, fifteen miles northwest of Cripple Creek.

There are several smaller stumps in the immediate vicinity of this one, but this is the largest in the forest, being about ten feet in diameter. Many interesting fossils are occasionally discovered near the stump.

Yours very truly,

MRS. MAUD E. WELSH.

### "Heat" by Pepper and Mustard.

Cambridge, Massachusetts.

To the Editor:

Through what physical process is the sensation of heat produced in the mucous membrane by pepper and mustard?

Sincerely yours,

ARTHUR A. CAREY.

White blood cells are rushed to the spot for the purpose of protecting tissues against an irritant. When the white blood cells are at work energy is actually liberated in the form of heat. Irritation of the tissues by pepper and mustard excites activity in various secreting glands belonging to the digestive apparatus, with a corresponding liberation of heat energy. Pepper and mustard upon the skin act more slowly than upon the mucous membranes, but will produce an area of elevated temperature, wherever they have been applied upon the skin with that object in view—instance, the mustard plaster.— Dr. Robert T. Morris.

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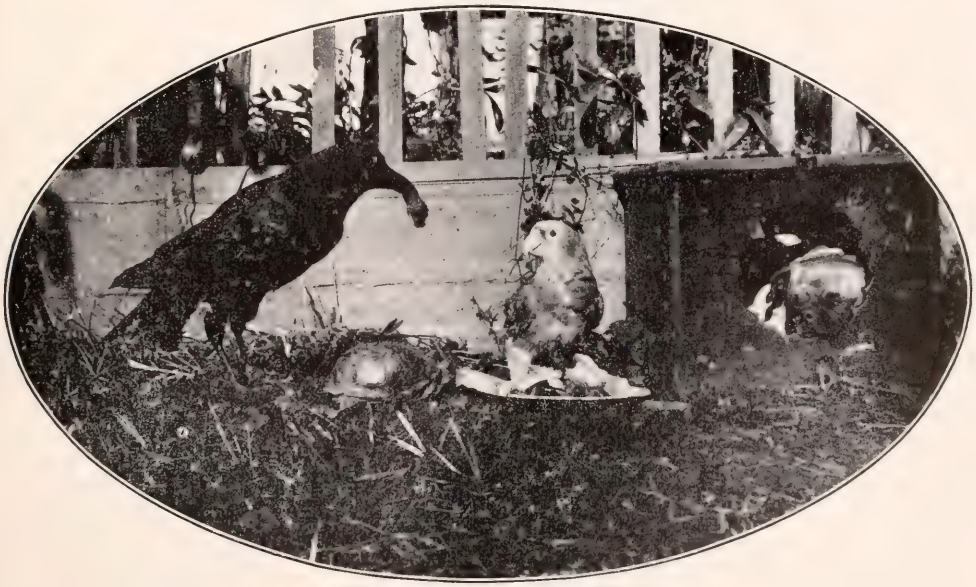
All highways lead to nature,
North, South and East and West;
And when you reach her portals,
She'll offer you her best.
—Emma Peirce.

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### Fido's Dream Comes True.

BY HARRY BEELER, PHILADELPHIA, PENNSYLVANIA.

I send you a photographic study of a dog asleep, and apparently dreaming of what is actually taking place in front of his kennel, A turtle, a parrot and a crow are stealing his food.



WHAT FIDO IS DREAMING.

# THE STARRY HEAVENS IN AUGUST

## The Starry Heavens in August.

BY PROF. ERIC DOOLITTLE OF THE UNIVERSITY OF PENNSYLVANIA.

By far the most important astronomical event of the present month is the eclipse of August 21, which is a remarkable total eclipse of the sun. The shadow of the moon at this time will first fall on the turning earth at a point a little north of the Arctic shores of British North America, but easily accessible that an immense number of observations will be made during the continuance of this eclipse. This fact alone would make it a most important one, but it also happens, because the moon is so unusually near the earth at this time and the sun so far away, that the shadow cast is an unusually large one. In other words, the disc of the moon will appear considerably larger than the disc of the




sun; consequently the latter body will be seen to be completely hidden for about two minutes from nearly all parts of the shadow path, and from certain points its light will be completely blotted out for two minutes and a quarter.

From the northwestern part of the United States a very little of this eclipse can be seen, but from the greater part of our country it will unfortunately be wholly invisible.

**The Motions of the Planets.**

The motions of the very bright planets which are visible during the present month are also of unusual interest. Low in the southeast, Jupiter now shines with its steady, golden radiance, this greatest of all the planets having entered the evening sky to remain with us throughout the remainder of the year. As the months go by, the observer will notice how the sun, in the course of its eastward journey along the path B V M, Figure 1, will draw ever nearer Jupiter, so that each evening the planet will be seen a little higher in the sky at sunset. By December 31, the two bodies will be found so near together that the planet will be seen in the western heavens; it will then follow the sun by only two hours, instead of by nearly thirteen hours, as at the present time.

[illegible] the most interesting part of the [illegible] planetary observations is now undoubtedly found in the west. Here the observer will see the very brilliant Venus and the far fainter Mars, both in the extreme western borders of the long constellation of the Virgin and [illegible] up from the ground a short [illegible]

[illegible] Venus is considerably [illegible] the west and nearer [illegible] Mars. Both planets are moving rapidly [illegible] but as the motion of Venus [illegible] that of Mars is will soon pass the more distant planet. On the evening of August 5, the two planets will be nearer together and will then make a remarkably close approach. The observer should not fail to examine them at this time. He will see the brilliant Venus due north of the red planet and separated from it by a distance equal to but one-third of the apparent diameter of the moon.

Even to the naked eye the two objects will thus form a striking [illegible] figure, but in a small telescope the view will be much more interesting. Both planets will be seen in the field at once and both of them will appear but little more than half full, the half disc of the silvery Venus having a diameter about four times as great as that of the reddish Mars.



[illegible] 2. The total solar eclipse of August 21. The path of the shadow is AHMP. Elsewhere, [illegible] CORSUN, the eclipse will be [illegible] partial eclipse of V

Throughout the remainder of the month, both worlds will remain in Virgo; by August 31 Mars will have traversed about one-third, and Venus two-thirds, of this constellation. On August 30, Venus will pass due north of the bright, bluish star, Spica, (at A, Figure 1) being separated from the star by a distance about equal to the apparent diameter of the moon. The planet then shines with seventy-five times the brightness of the first magnitude star.

Mercury is at its greatest western elongation on August 5, and may then be seen low in the northeast for about an hour before sunrise. This planet again enters the evening sky on August 30 but does not reach its greatest distance east of the sun until October 10.

Saturn and Neptune are also morning stars and are too near the sun to

be satisfactorily observed during the present month.

Uranus is near the center of the constellation Capricornus, coming into opposition with the sun on August 2, but this faint planet cannot be satisfactorily observed without the aid of a moderately large telescope.

**Observing Venus in Daytime.**

Several letters have been received from correspondents who state that during the past few weeks they have found Venus, as well as certain of the other planets and (in one case) a fixed star, in the daytime. One observer mentions having even seen Venus at noon with the naked eye. These observations are quite possible, and are always of interest, but they require care and some trouble to insure success.

There are two difficulties to be overcome, first, to protect the eye from sunlight and from the general glare of the sky, and second, to find the object in the heavens. The latter is for the amateur far the more troublesome, to the possessor of a star list or a star atlas both difficulties may be readily overcome as follows:

Select from the atlas a star at the same distance above or below the equator as Venus and note by how many hours the star preceded the planet in the sky. Prepare a long hollow tube of pasteboard or other material and fix this in a position to point to the star at some hour before sunrise; leaving the tube firmly fixed in position, and return to it after an interval of time equal to the number of hours and minutes by which the star precedes the planet, when the planet will be seen through the tube. Having thus found its exact position in the sky, it may probably be seen when not looking through the tube.

Thus, if we wished to see the planet on the forenoon of August 13, our almanac would show us that at this date the planet was exactly as far from the equator as, for example, the middle star of the Belt of Orion, but that it follows this star by 6 hrs. 38 min. If therefore we should point the tube exactly at this star on August 13 at (say) 3 A. M., we would see the planet through the tube at 9 hrs. 38 min. A. M.

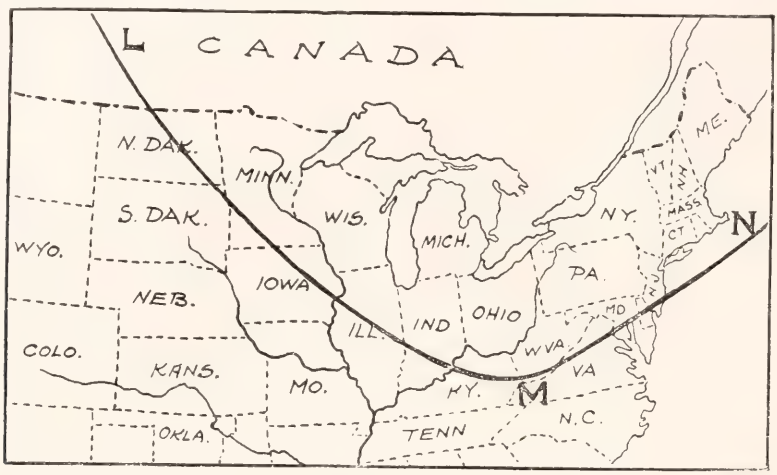



Figure 3. At sunrise on August 21, observers north of the line LMN will see a very small part of the sun's upper edge hidden.

Many telescopic observations on the brighter stars are continually made at the larger observatories in the daytime; delicate details on so brilliant an object as Venus are, in fact, best seen when the sky is bright As the brilliance of Venus will continually increase from now until October 23, the coming weeks afford the best opportunity for making naked eye, daylight observations of this planet.

**The New Comet.**

The interesting comet discovered from South America last summer, when it was far south of the Celestial Equator, has since been running rapidly northward among the stars and drawing so much nearer the earth that it is strongly hoped that during the last days of the present month and the first two weeks of September it may

become visible to the naked eye, though this is as yet not certain.

This comet passed to the east of the sun in July and will this month follow along the path CD, Figure 1; throughout the fall it will be in Ursa Major, and so will remain above the horizon throughout the entire night.

**The Solar Eclipse of August 21.**

The shadow during this eclipse will follow the path AHMB, Figure 2; observers on this path will see the disc of the sun entirely hidden by the black disc of the moon. Those south of the path, but within the area DCRSKN, will see the moon's disc but partially covering the sun. To those south of the line CL the upper edge of the sun will be hidden, while those north of this line will see the moon pass over the lower part of the sun. Figure 3 shows the regions of the United States from which a small part of the eclipse may be seen. Observers north of the boundary LMN will see a very small portion of the sun's upper edge darkened as the sun rises on the morning of August 21. From all other parts of our country the eclipse will be wholly invisible.

**Domestic Animals Like Concealment.**

Hartford, Connecticut.

To the Editor:

Please accept my thanks for the March copy as a sample. I have greatly enjoyed it. The problem as to the ability of a cat to recognize colors, reminds me of two instances in my own experience. We once had a Gordon setter, whose body was covered with jet black, silky hair, while his legs were brown and he had the two brown spots so often seen over the eyes. He looked very pretty when he was lying on a white fur rug, and he would sleep there at my special request! But he chose, when his own desire could be gratified, a black rug, on which he was almost invisible. Again a white fox terrier, with black ears and three black spots on back and side, was perfectly happy if she could curl and cuddle into something soft and white. I believe that a desire for concealment is natural to domesticated animals, such as the dog or the cat, when they are asleep and helpless, just as it is with others in the wild state.

Very truly yours,

MRS. E. A. SHUTTLEWORTH.

## The Country Boy's Creed



I BELIEVE that the country, which God made, is more beautiful than the city, which man made; that life out-of-doors and in touch with the earth is the natural life of man.

I believe that work is work wherever we find it, but that with Nature is more inspiring than work with the most intricate machinery

I believe that dignity of labor depends, not on what you do, but how you do it; that opportunity comes to a boy on the farm as often as to the boy in the city; that life is larger and freer and happier on the farm than in town; that my success depends not upon my location, but upon myself; not upon my dreams, but upon what I actually do; not upon luck, but upon pluck.

I believe in working when you work, and playing when you play, and in giving and demanding a square deal in every act of life.—*Suburban Life.*

# SEEING BY AID OF THE LENS

**Interesting Microscopic Animals.**

That the waters of the earth contain a greater number of individuals, a greater variety of forms, a greater aggregation of peculiar creatures adapted to their special environment, than exists on the land, is well known to scientific men, but forgotten or perhaps unknown to the majority of readers that have little or no interest in scientific matters. In the fresh waters



THE EPISTYLIS.
Photomicrograph of part of specimen on mount from Powers & Powers.

of the United States alone, there are more than two thousand known species of Infusoria, or of what the reader probably knows by reputation as "animalcules." The drinking water supplied by the city in which the writer lives averages about five of these "animalcules" to the drop, the number varying with conditions of temperature, abundance of food supply, and perhaps of other essentials.

Many, probably the greater number, are entirely free-swimming. They are independent; they act as they please, or as nature directed when they were created. Others are permanently attached, either immediately to the support, or through the intermediary of a stem, that may be a simple trunk, rigid and immovable, or that may have a central, muscular thread that promptly draws the animal away from danger; or the stem may be branched, with an uninterrupted muscle extending through both stem and branches; or it may be branched, and have a muscular thread interrupted at the fork of

each bough, so that when the muscle of the main trunk contracts, the entire structure is drawn downward, or each branch may contract independently of every other.

On the tip of each bough, or on that of the single stem, are one or more living animals. Like the leaves on the tree, or the fruit on the branches, these invisible, microscopic creatures live and have their being, laboring in their peculiar way for their food, accepting propitious morsels, rejecting undesirable fragments, spreading their bodies to the aerating currents, reproducing themselves, dying and melting into nothing so far as we can see, but into something probably as valuable to higher bodies as certain lower animals are valuable to us.

Among these invisible creatures is one form that is so plentiful in certain places in the water that it may be described as common, or frequent, or abundant, or by any other term of the kind. It is Epistylis, the "animal on a stem." The animals on the stem live singly, or one or two together on the tip of the branching trunk that, without a muscle is rigid immovable; when once attached is fixed in that spot for all the time that is allotted to it. Three such colonies of Epistylis are shown in the accompanying photo-micrograph, in which the little Epistylis bodies and stem are magnified.

Each animal body, or zooid, is there shown in its contracted, "still-life" condition. Something has frightened the colony. A sudden jarring of the water, a quick slap that splashed the surface, the contact of some roving, comparatively gigantic "animalcule," has terrified the little creatures, and each has shuddered into the elongated, ovate form here shown. When their equanimity shall be restored, they will expand the front into an animated funnel and set in motion the five or six circles of cilia, those vibratile hairs that embellish the border, and that labor pretty continuously for the food supply that is entirely dependent upon the currents that these delicate hairs produce by their rapid whirling. These currents, small and weak as they are, set in toward their bearer and owner, and bring within reach of the oral aperture the minute particles of vegetable matters so welcome to the "animalcule."

None of these anatomical structures are shown in the photograph. They become visible only to the microscope and even then only when the animal is expanded, and is "feeling pretty good."

The narrow, dark, curved band at the front of each body is the nucleus, the center of the animal's life, the spot that its soul inhabits, or what in it corresponds to a soul.

These little creatures are worth seeing, worth studying, worth a deal of thought, worth more than mere words can convey. A shallow pond is not water only; it is not water and weeds only; it is not water and weeds and fish only. It is alive and quivering. It is trembling and rippling with living, invisible, unimagined, active, sentient things, of which our little Epistylis, our minute "animal on a stem" is only one, but it is an interesting one.

## From a Lover of Microscopic Objectives.

Philadelphia, Pennsylvania.

To the Editor:

I note with pleasure, in the June issue of THE GUIDE TO NATURE, the sketch of Robert B. Tolles, whose memory richly deserves to be kept before all users of the microscope, few of whom know much about him.

There can be no question that advances in the performance of microscope lenses were due more to Charles A. Spencer and Robert B. Tolles than to any other two men that ever lived. This may be said without in any way reflecting on Lister, Wenham, Abbe and many others that were equally earnest in their efforts. While Tolles achieved the most brilliant results, he had the advantage of being a pupil of Spencer's, who was entirely self taught. The two names may be justly joined.

I cannot understand the reference to the invention of a three system lens, as this had long been the usual number in a microscope objective. While the number is of minor importance compared with the manner of constructing and uniting them, any credit in this direction should go to Tolles for the devising of a type of FOUR system lenses which has been generally adopted for immersion objectives. The number of Tolles optical inventions, which include the achromatic triplet magnifier now so generally

used, is too great to permit of listing in anything short of a historical record, but his epoch making achievement was the demonstration of the possibility of producing objectives with apertures exceeding the equivalent of 180 degrees in air. At a time when the world's leading authorities, under the leadership of Wenham, were almost unanimous in the opinion that this was impossible, Tolles not only made such objectives, but KNEW THAT HE DID IT, KNEW HOW HE DID IT and WHY HE DID IT. But what appealed most to the amateur microscopist, and tends to canonize Tolles as the patron saint of this rapidly decreasing brotherhood, was the fact that he placed the advance of microscopy beyond all consideration of personal profit, and permitted Colonel J. J. Woodward, who had taken sides with him in the discussion, to publish in the Monthly Microscopical Journal of London a diagram of one of his objectives, showing every detail of construction and the course of the rays. At the same time he furnished to Professor Reuel Keith all the elements of its construction to be published, with a mathematical demonstration as to the true aperture of the lens, thus putting an end to a bitter dispute which had for years been waged in the Journals of England and America, but at the same time necessarily revealing his best formula to rival opticians.

With respect to the character of his work, it is sufficient to say that in my own collection are included dry objectives made by him more than fifty years ago that are scarcely equalled by any of similar power now obtainable and immersion objectives from twenty-three to thirty years old, which are surpassed by only the very finest apochromats of recent years.

Very sincerely yours,

F. J. KEELEY.

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Some must teach, some must investigate, some must adapt to human uses. It is not often that these functions can be united in the same individual. It is not necessary that they should be united; for art is long, though life is short, and time is fleeting.—David Starr Jordan in "The Stability of Truth."

### Do Not Uproot the Wild Flowers.

It is astonishing how much human effort is used to prevent what should, to every one, appear to be self-evident. Weeds must be uprooted but wild flowers, especially the rare and retiring ones, should be cared for, nourished and treated kindly, but to further such ends a special society seems to be required. At least there is such a society, particulars of which may be obtained from Miss Amy Folsom, 88 Marlborough Street, Boston, Massachusetts.

If all were members of The Agassiz Association, there surely would be no need for any special society to foster any particular phase of nature, because our fundamental principle is to teach and to practice kindness, care, love and study for all things included within the kingdom of nature.

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### Transplanting Wild Flowers.

Red Bank, New Jersey.

To the Editor:-

I have a wild columbine in flower at this date, that has bloomed every year for forty years. I, as a child, dug it up, and put it where it now is.

Some of the wild flowers are so beautiful and so easy to get that it is surprising that so few persons have them about their homes. Hepatica can be moved at almost any time. I have often transplanted the blooming plant. It always lives, if it is watered for awhile to give it a chance.

Bloodroot will also live, if you will dig up the entire root, and plant it in a rather shady place. There is Jack-in-the-pulpit. I have that in the bed with Hepatica. It is at its best at this date.

If you care for such things, you can get much real pleasure while watching them grow. When they are at their best they are worth looking at and worth showing to your friends, especially to those that have no place in which to raise anything of the kind.

I have named only a few of the common early blooming plants. There are dozens of delicate and dainty wild flowers that one can have for the digging.

A. R. COLEMAN.

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### The Banner of Dawn.

Its red, the red of morning sky,
Its white, the valley mist;
Its blue, the blue of mountain heights
Before they are sun-kissed.

—Emma Peirce.




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# THE AGASSIZ ASSOCIATION

**ARCADIA: Sound Beach, Connecticut**

**EDWARD F. BIGELOW, PRESIDENT.**

FOR·POPULARIZING·KNOWLEDGE
AND·LOVE·OF·NATURE·AMONG
YOUNG·AND·OLD

### The Art of Observation.

Our ARCADIA is a miniature of nature. It affords a good field in which to cultivate one's power of observation. The ability to "see things," like every other talent, is a gift, and, like every other providential gift, it may be enlarged, developed and made useful, or it may be allowed to dwindle and finally to disappear. We are glad of the opportunity to help friendly visitors in any serious effort to cultivate their natural power of observation, by pointing out some of the best and most desirable methods of doing the work. It pains the writer to observe that in the larger world of nature so few people are able to "see things," and he often wonders why. Why do so few go to nature for their entertainment and instruction? I more and more firmly believe that the reason why only a small percentage of people "see things" is because they do not know how. Perhaps they do not know how to get anything out of a visit to nature. I have reached this conclusion by observing the various characteristics of ARCADIA's visitors. Recently two young ladies walked into the office, and as an assistant arose to greet them, one young woman said, with a giggle, "Oh, sit still. You needn't get up. We will take only a minute or two and walk through to see the animals."

She is a type of person that does not want to look at nature, one that seems unwilling to take advantage of kind assistance that would try to arouse her interest. We have seen, in a more extensive Arcadia, people that say, "Don't trouble yourself. We do not need any assistance from you. We will dash through the country at the rate of a mile a minute, and we shall see all there is to be seen in nature."

There is another type. She arrived at ARCADIA an intelligent, cultured, cheerful example of self-confidence, and of the absence of any desire for help. She said, "I will take but a few minutes of your time. I have been familiar with the things of the country all my life and I do not suppose you have anything new to show me." I thought of the things to which I had devoted much time and laborious study, and said, "Come out and see the honeybees." I showed her the appliances of a well equipped apiarian laboratory, and began to direct attention to thermometers and scales and observation hives, when she interrupted. "I do not believe," she said, "that you need to tell me all that. I want merely to ask why you are doing this."

"I am trying to learn something about the honeybee."

"Why, don't you know all there is to know about them?"

"No. On the contrary, I feel, after some fifteen years of careful study, that I have learned only the extent of the unknown in the subject, and gained a little practice in learning how best to study these marvelous insects."

With a wave of her hand, and a little smile of self-complacency and perhaps of contempt, She said, "O poor man, I am sorry for you. Why, I was born and brought up in the country, and when I was six years old I knew all there is to know about honeybees."

How many people there are who might well say, "Poor man. Why study nature? When I was a baby and first opened my eyes, I saw the sky and the trees and all there is to be seen, and since then I have not found it necessary to study anything." Fortunate creature. I have hitherto believed that there is only one Omniscient Person in the universe, but there seem to be two.

There is a third type that affords an impressive lesson. This is the person of fiz, and froth and over-enthusiasm. She and her friend recently called here. She said, "I have been longing and longing for years to visit ARCADIA, and to have a time of delight among the wonderful and interesting things that I know you have here. I have been so wanting to come that I cannot tell you how I have really wanted to get here. I have read about the place in the papers, and I have seen some of it in that delightful magazine, and I know it is an ideal place in which to see all sorts of interesting things. There is nothing in the world that I like so well as nature and all that belongs to her."

"Why is this your first visit? ARCADIA has been in existence for four years, and you live only about two miles away. If you regard it as a place of such supreme interest why have you not come early and often?"

"I have been so busy with other things. You have no idea how one's time is taken up with social duties. It does seem as if I could not spare a minute to visit ARCADIA, yet I know there is nothing more interesting in all the world than the delightful things you have here." An attempt was made to show her some of those delightful things, but still she chattered on. As she was so intensely appreciative of ARCADIA I felt that the best was not too good for her. I brought out a fine microscope and placed under it a pretty slide and, as I anticipated, was rewarded by a torrent of verbiage. "Isn't that beautiful and interesting, so mervelously beautiful and interesting! What a delightful life you must live among such wonders as these! If I was here, I think I would spend all my time in looking at such beautiful and interesting things. Will you look at that? Isn't that charming?" Turning to the lady friend who had been standing near-by smiling at the verbose enthusiasm, she continued, "You must come and see this, it is such an amazing thing. Look at its wonderful and graceful form. I envy anybody that can live among such beauties as these. Now look there, at the upper part. Isn't that wonderfully interesting? Why it looks—, why, it looks like a little dog's tail. You can see it there."

I tried to show her other things, and succeeded in setting free a flood of gushing praise for our work. I wish that I could appreciate nature as I see that some people appreciate her,—as they rush to catch a train or a trolley car. I wish I could live in a delirium of ecstasy, and rave over trees and the song of birds and atmospheric color effects, but my love of nature has never been cultivated to that degree. It should not be so much waterfall and rippling brooklet, as a steady flow of the stream of nature. It is love and the application of all the powers of mind and body, and never yet have I been able to throw an unabridged dictionary of enthusiasm at her—while I have been running to catch the train.

A party of about eighty, two-thirds of them children, the rest adults, were recently spending the day at ARCADIA. They came at about ten o'clock in the forenoon and made their plans to go home at about four in the afternoon. They had plenty of time. In a favorite part of the laboratory I was showing a few of these visitors some things upon which I had spent almost a lifetime of work and that seemed to me marvelously interesting. As space was limited, after a few of these people had seen what I had to show, they went out to make room for others. An attendant outside heard some of the visitors who had not been to this favorite spot inquire of those who were going out, "Is there anything there worth going to see?" And the reply was, "No, nothing at all; no use in your going in there." And yet I had been showing what to me seemed to be the best things to be seen, but to those with whom I had labored my labor had been in vain. There was nothing there worth going to see, notwithstanding that for more than half an hour I had been exploiting some of the best of nature's work. Then I dreamed. I saw a throng of people coming from old mother earth. They met those who were to visit that fascinating place and heard the inquiry, "Anything worth going down there to see?" And the reply was, "No, nothing at all." Then I awoke with a start. You can see, but you won't see. You are too busy with your petty affairs and thoughts to take time to look at that world of marvels."

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There is still another type of the observer of nature that, we are thankful to say, frequently comes to ARCADIA. He dropped in last week. He came in the form of a doctor with his friend from New York. I said, "Are you in a hurry?" "No, we want to know what you have and have come prepared to take sufficient time to find out." "Good!" I said, "you are a rare treat. The worry of my life has been the person that is rushing to catch the train. I sometimes wish the depot or the trolley road was farther away. Or there is an almost equal annoyance in the one that is so intensely apologetic about 'taking much of your valuable time:'" My time is valuable, I admit; it is worth at least two dollars a minute; that is judging from the pleasure I sometimes take as compared with the pleasure of some people whose cash income is actually two dollars a minute. But I am always glad to spend at least a hundred and fifty

dollars of that two dollars a minute, upon any really appreciative observer. So I was delighted when the doctor said, "We have plenty of time to see whatever you wish to show us." They arrived at a little after four o'clock and they and I forgot time until we were suddenly aroused by the sound of the supper bell. They did not "know it all." They came desiring to learn. They were so loving of nature and so interested in seeing things that they did not throw away even a minute in useless raving about their interests and their delight. When they asked a question it showed that they had seen to good advantage. I feel sure that men of that type will get much out of nature. They recognize that actions speak louder than words, and that nature is not to be courted by enthusiastic praises but by quiet, prolonged, patient study of what she has to show. ARCADIA is here and so are the attendants, who are ever ready to help those that want to know more of nature. Nature is edifying and refreshing. Everywhere and always she responds to the seeing eye and to the appreciative heart and mind. Our appreciative friends that come here to enjoy nature and to take her in a sane, sedate manner, need not feel regret at "taking your valuable time." That is what life is for. It is to introduce our friends to yours. Suppose that you should bring your "best girl" to some one not acquainted with her, and that friend should begin to cry aloud, "Isn't she wonderful! Isn't she beautiful! How you must love her! She is so beautiful. She resembles a person that I saw in the West Indies." Or again she says, "Yes, yes; I can see that she is fascinating; you must greatly enjoy her company, but I cannot consent to take any more of your time."

Come to our little ARCADIA or go to the big ARCADIA where so much of nature is spread for you free of cost, yet priceless; go as you would to win a sympathetic friend; be genuine, frank, sincere, for a sympathetic friend is worth a lifetime of devotion, and a lifetime is not long enough to exhaust her love, and should be too short to exhaust yours. Let time speed on. What is time when you stand face to face with eternal realities of old Mother Nature?

**Appreciates Miss McGlashan.**

Salt Lake City, Utah.

To the Editor:

Could you tell me where a person could learn more by a correspondence course in butterfly farming than you could from Miss Ximena McGlashan of Truckee, California? I do not think you can.

I have been a subscriber of "The Butterfly Farmer" she publishes since last September. Its pages contain more information for the beginner in butterfly farming than you could glean from other costly books.

No wonder she has made a success of it. With the help of her father, who has spent the best part of his life in the work, and the interest she takes in it, she is bound to succeed. She has always been willing to explain to me by personal letter anything that is not plain to me. I have corresponded with her quite often. All her letters have been to the point and nothing else. If you do her a favor she is ready to acknowledge it. She is different from other school girls. She is ready to help her parents out in return for what they have done for her. I do not write to her for curiosity. I have always been interested in nature. You can pick up most any entomological journal or magazine and each contains an article on Miss McGlashan's butterfly farm. I happened to pass through Truckee on horseback awhile back and I saw her chasing butterflies so I thought I would write to her.

I am sorry to hear that she is losing out on offering "The Butterfly Farmer" for $5.00.

Yours truly,

OSCAR HAGEN.

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**That Hornets' Nest with Extension.**

Chipley, Florida.

To the Editor:

Seeing the photograph and discussion of the hornets' nest in the July number of THE GUIDE TO NATURE, I think I can throw some light on the subject.

While I cannot say that I saw the hornets at work on these nests it is my opinion that they are the common black or bald faced hornet. I spent ten years among the hills and wilds of Arkansas once and these shaped nests were common, and as the black hornet was the only kind we ever saw nests

of there that were of any size, we could draw no other conclusion than that they were the nests of this hornet in the first stage of construction. There they were usually placed under the eaves of houses or about the cornices and I have seen as many as five or six of them at a time on the same building. They were never more than two inches in diameter and the tubes were about two inches long and about one third of an inch in diameter.

We do not think that these were the finished nests as they were on a neighbor's house and as we were there frequently and these nests were often noticed and commented on and no insects seen about them we formed the opinion that they were experiments or "play houses" and never used.

We had there a species that we called the yellow hornet but they may have been queen yellow jackets as they were always seen about hollow logs, stumps or about the ground, we could not connect them with the nests referred to. And too the nests were far more common than the insects.

A thought which has come to me in this connection is that this tube was merely to prevent drafts of air from reaching the young while the nest was small and as the nest increased in size and more folds were added about the nest and the entrances were further removed from the brood, this protection became unnecessary and was dispensed with.

On talking the matter over with Mrs. Pleas, who is also a naturalist and expert taxidermist, she says that when she was a girl she saw a yellow hornet working in such a nest about five inches in diameter, near Richmond, Indiana, the nest being attached to the cross piece of a grape arbor.

This was at a neighbor's place where she was visiting and she never saw it again. So it is possible I am mistaken and those seen in Arkansas were the same kind.

C. E. PLEAS.

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The student of nature is never at a loss to know what to do He can find plenty of subjects for study and for entertainment every day in the year. And with every added year of observation this world becomes to him a more beautiful and wonderful place.—Bessie L. Putnam; Conneaut Lake, Penn.

### To Preserve Hen's Eggs.

BY NIAL MORROW LADD, GREENWICH, CONNECTICUT.

Take one quart of water glass (silicate of soda) to fifteen quarts of boiled water. Allow to cool before using. Select *clean* eggs and immediately after gathering place the eggs in this solution. Use large stone crocks with covers that fit snugly and keep in cool place. If eggs become uncovered through evaporation some time after jars are filled, add more solution. Eggs will remain fresh to taste six or more months after being put in the water glass.

Prick small hole in shell when boiling, otherwise they will burst.

Emphasis is laid upon using only clean eggs.

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### Our First Subscriber.

In view of the recent improvements in THE GUIDE TO NATURE and the plans for further improvement in the future, it may be of interest to our readers to note the beginning of things. Our first subscriber was W. I. Beecroft of



MR. BEECROFT.

Adams, Massachusetts. He sent us payment for a year's subscription on February 10, 1908. The first old Chapter to renew and send its membership dues was Chapter No. 475 of Valley

City, North Dakota. The first new Chapter to be organized under the present management was No. 1011 of Johnstown, Pennsylvania. Our first member to enroll was Professor



PROFESSOR CHARLES E. BESSEY.

Charles E. Bessey, who has taken very active interest in our work.

Mr. Beecroft in complying with our request to send a photograph writes: "I do not doubt but what you have had 'many snows' in the course of the work. I often think of the amount of labor entailed which people as a rule do not realize. I have always thought the magazine capable of further usefulness." Mr. Beecroft makes the very sensible suggestion that naturalists should never strive for the abnormal or the unusual, but should devote attention to commonplace nature. He is right. There seems to be on every hand a striving for sensation and that spirit is allowed to influence the study of nature by those who are not her best and most experienced lovers.

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In no field has science yet reached finality. It sees some things very clearly, but the unknown lies about on every side, a trackless wilderness yet to be cleared and fitted for human habitation.—David Starr Jordan in "The Stability of Truth."

### Increase in Membership.

India Taylor, Lake Villa, Illinois.

Professor Earl Douglass, Pittsburgh, Pennsylvania.

Harrison M. Tietz, Richmond Hill, Long Island, New York.

Mrs. Avis B. Roberts, Los Angeles, California.

Elton R. Darling, New Bedford, Massachusetts.

Robert B. Cooke, Chattanooga, Tennessee.

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### Recent Cash Contributions.

| | |
|---|---|
| A Friend, Covington, Kentucky | $ 1.00 |
| Mr. A. J. C. Anderson, New York City | 5.00 |
| Mr. J. Langeloth, Riverside, Connecticut | 10.00 |
| Mr. R. L. Agassiz, Hamilton, Massachusetts | 25.00 |
| Total | $41.00 |

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### Contributed Specimens.

Grand Rapids Veneer Works, Grand Rapids, Michigan: large piece of bird's-eye maple.

Mr. Francis H. Mayhew, Frankford, Pennsylvania: tie made from artificial silk.

Mr. J. Willis Youngs, Stamford, Connecticut: two young bats and mother.

Joseph Delaventura, Sound Beach: moth, *Telea polyphemus.*

C E. Pleas, Chipley, Florida: specimen of "Indian bread" *Pachyma cocos,* and three large beetles.

Frank W. Lacy, Private U. S. M. C., Las Animas, Colorado: additional micro-slides.

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### Contributions of Drawings.

The beautiful drawing on the first cover page for the last three numbers were contributed by Mr. Clement B. Davis, New York City.

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### Nature's Largess.

Golden-flecked the meadow,
Silver-starred the field,
What a wealth of treasure
Coffers twain would yield!

Not for earth's exchanges
This unmeasured dole;
Higher be its mission,
Coinage for the soul.

—Emma Peirce.

### A Dilemma.

A little girl with an inquiring mind stood at her mother's knee. To judge by the expression of her face, she was evidently studying some particularly knotty problem.

"What is it, Jenny?" asked the mother.

"Mamma," said the child, seriously, "if I grow up and marry, shall I have a husband like papa?"

Like a dutiful wife, the mother replied, "Yes, dear, I hope so."

There was a long pause. Then the child asked, "And if I don't marry, shall I grow up to be like Aunt Susan?"

Again the answer was, "I hope so."

The little girl put her hands to her head and said, in a tone of despair, "Well, I **am** in a fix." —"Sunshine Bulletin."

---

"Will you walk into my parlor?"
Says Dame Nature to us all:
"'Tis a most attractive parlor
From the Spring through Golden Fall;
With its portals ever open
For you all to come and go,
And with entertainment offered
Till the advent of the snow."
—Emma Peirce.

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THE GUIDE TO NATURE is a wonder. Better and better every time.—A. D. D. Wood, Lansing, Michigan.

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THE GUIDE TO NATURE is quite worth while. It is a real guide.—John Burroughs, West Park, New York.

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Of course we want to see THE GUIDE TO NATURE maintain its present standard, and it can do so easily if all the subscribers and members will do their part.—Robert S. Walker, Managing Editor "The Southern Fruit Grower," Chattanooga, Tennessee.

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### The Advertisement Produced Results.

Beaufort, N. C.

To the Editor:

Please withdraw my advertisement. The advertisement was a great success. I really haven't had time yet to answer the numerous inquiries I received as a result.

Yours respectfully,
WILLIAM L. DOLLEY, JR.

---

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I want to assure you that I think your magazine is the best all round nature periodical I have yet seen and I carry a copy of it on all my trips and recommend it to all nature lovers.—Mrs. L. P. Munger, President Michigan Audubon Society, Hart, Michigan.

# LITERARY AND BIOGRAPHICAL

The simplest and the purest joys,
The ones that never pall,
Are always waiting near at hand,
And we may grasp them all.

The joys of home and out-of-doors
Can aught else equal these?
They grow with growth, expand with time,
The same o'er land and seas.
—Emma Peirce.

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**Grammar of The English Sentence.** By Jonathan Rigdon, Ph.D., New York: Hinds, Noble & Eldredge.

This book was brought to my attention by an expert grammarian who stated that to him it had been more useful than any other work of the kind in giving the details of the English sentence. I find that it is well arranged, attractive, and that it enteres so efficiently into details as to make it a really valuable text-book. Those of our readers that are interested in the subject will find in this book much interesting and important material.

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**The Bird Hospital.** By Caroline Crowninshield Bascom. Boston: H. M. Caldwell Company.

This book details, in a simple and pleasing manner, the author's experience in caring for accidentally injured birds that children and other persons have brought to her. Some were so wounded and broken that they were unable to fly or to care for themselves. The affection manifested by the birds so treated and helped was astonishing, and shows the result of kindness and gentle consideration in those creatures that are usually considered so far beneath us in intelligence.

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**The Natural History of the Farm.** By James G. Needham. Ithaca, New York: The Comstock Publishing Company.

All agriculture is nature study, but not all nature study is agriculture. Out of the great, comprehensive, universal field of nature study the author of this book has taken those things which apply directly to agriculture, but it is none the less nature study. He says:

"These are the things we have to live with: they are the things we have to live by. They feed us and shelter us and clothe us and warm us. They equip us with implements for manifold tasks. They endow us with a thousand delicacies and wholesome comforts. They unfold before us the ceaseless drama of the everchanging seasons—the informing drama of life, of which we are a part. And when, in our rude farming operations, we scar the face of nature to make fields and houses and stock pens, they offer us the means whereby, though changed, to make it green and golden again—a fit environment wherein to dwell at peace."

**The Story of a Thousand-Year Pine.** By Enos A. Mills. Boston: Houghton Mifflin Company.

This is a little de luxe book of pleasant statements in regard to the author's investigation of an old pine tree. It sets the reader to thinking of the many changes that the human race has experienced during the life of a single tree.

---

**How to Keep Bees for Profit.** By D. Everett Lyon, Ph. D. New York: The Macmillan Company.

Dr. Lyon is an enthusiastic bee-keeper. He has written a good handbook in which he describes the care of bees. It is thoroughly up-to-date and does not detail old-time methods but tells what one wishes to know in the year 1914. From our point of view the book lays too much stress upon pecuniary profit, but we recognize that in this intensely utilitarian age bees and most other things in nature are to many people worthless and useless, unless they keep the pocketbook filled. We have always contended that bees are worth while in themselves, worth caring for as one might care for butterflies, earthworms or any other object of nature. The intrinsic interest is the best profit. However, in Dr. Lyon's book one can find plenty of material that does not savor of the almighty dollar. Even to the enthusiastic scientist or hobbiest the dollar is not objectionable because it helps to carry the studies forward to a more successful issue.

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**The Essence of Astronomy.** By Edward W. Price. New York: G. P. Putnam's Sons.

It is encouraging to meet with such a book as this. It is not a text-book for the high school, but a popular handbook for the general reader. One begins to think at times, as he notes the new books on astronomy, that except among professional astronomers, the only use ever made of this grandest of sciences is to teach it in the high school. It is good for the high school, and equally good for men and women everywhere. This book is true to its name. It contains the astronomical facts of essential interest expressed in a readable manner. In addition it contains an interesting and useful chronology such as I do not remember to have seen in any other book. Here is given a bird's-eye view of the science, beginning "previous to the fifth century" and ending in 1908 with the discovery of Eros, our nearest planetoid. For developments in astronomy since 1908, the author might well have suggested that the reader should look to the astronomical department of THE GUIDE TO NATURE which gives every month the essentials of the astronomy of the season.




Vol. VII September, 1914 No. 4

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### Kill off the Roosters.

All roosters more than a year old should be killed. The Ohio farmer estimates that the farmers and poultry raisers of Ohio have suffered an unrealized loss of one million, five hundred thousand dollars, in the production of fertile eggs that do not keep well. Several states have taken action against the rooster.

One step won't take you very far—
You've got to keep on walking;
One word won't tell folks who you are—
You've got to keep on talking.
One inch won't make you very tall—
You've got to keep on growing;
One little ad won't do it all—
You've got to keep them going.
—"The Cat Courier."

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**FRONT VIEW OF A PART OF ARCADIA**

Beginning at the left the buildings are Botany Bungalow, Welcome Reception Room, Laboratory (only the peak of roof visible), Office, Birchen Bower.

In the rear of these are three more—Pet House, Apiarian Laboratory and Storage Building for cuts, negatives, etc.

Other buildings needed are Indian Lodge (a guest cottage in Agassiz Grove), Dormitory, Astronomical Observatory, and small resident cottages like Botany Bungalow or a little larger for co-workers and caretakers.

ARCADIA is growing into a real Nature University.

## What is ARCADIA?

ARCADIA is the home of The Agassiz Association. The word was suggested by the Arcadia that many centuries ago is said to have existed in Greece. Its meaning is that of all nature. To live in Arcadia is to live near to nature. But we have somewhat changed that signification so as to apply the word to our own ARCADIA, because that is not only the home of all nature, but the first and last thought in the study of all nature is the spirit of the AA, The Agassiz Association. It inspires and continues our work—first and last—and is the central point of view. The principles of The Agassiz Association are well known, or they will be made known to any earnest inquirer.

At ARCADIA we are trying to build a nature university, the plan to include camping ground, outdoor auditorium in the Agassiz grove, cooking house, tent platforms, a cottage, a dormitory to accommodate from twenty-five to fifty students, a library, a museum, and an astronomical observatory. There is no institution in the world conceived on a similar plan and with a similar scope of work. It is therefore not surprising that we are misunderstood, but we are less and less misunderstood as the plan becomes plainer as it unfolds. We have built a Welcome Reception Room for the assembling of all interested in the work, and incidentally as a social center for those who wish to make it such. It is not strange that in the early days of ARCADIA the whole plan was misunderstood and this misunderstanding has been disappointing and discouraging to all participating therein, but from the very first to the main workers there has been a clear cut plan, a well defined course of work, a definite purpose.

When we have our completely equipped plant, we shall need workers in the various departments. We especially desire to train field secretaries who shall promulgate everywhere the principles and the teachings of The Agassiz Association for the study of nature. We should like to sprinkle ARCADIA everywhere. There is in all the United States no institution that holds this relation to general, popular, informal, recreational, educational "nature study" as distinct from natural science. Schools and parents everywhere recognize the need. If you will talk with any school superintend-

ent he will tell you that he longs for nature study but cannot get his assistants to teach it. Talk with many a family moving from the city to the country and they will tell you that they want to get all possible benefit from living near to nature, but do not know how. Talk with bright-eyed boys and girls and you will find them inquisitive as to the objects of nature. They need help and some one to help them. These needs ARCADIA and the AA purpose more completely to supply than they have hitherto been able to do.



**PORTRAIT OF LOUIS AGASSIZ.**

(Presented to The Agassiz Association by his grandson, R. L. Agassiz.)

Unquestionably Agassiz was the greatest teacher of science the world has seen. The faculty of conveying information and enthusing the recipient with ardour was inborn.—Professor Frederick Holder in his "Life of Louis Agassiz." The opening words of a chapter explaining that The Agassiz Association is the great teacher's living memorial.

The Agassiz Association has been for thirty-nine years and will be forever the greatest monument to Louis Agassiz. There is at Cambridge, Massachusetts, a great museum that bears his name, upon which many thousands of dollars have been expended by members of the family, the state, and others. Dried and bottled specimens do not and cannot represent Louis Agassiz, the great teacher, but rather his son, Alexander Agassiz, the collector and technical investigator.

Louis Agassiz even disliked the museum and wrote in 1868: "As far as I am concerned personally, the Museum is of very little use to me, as I believe in study ex natura, and have but little fancy for closet investigations where you get long Memoirs about animals which have never been seen living or in state of nature by the author."

Alexander Agassiz loved the museum and devoted to it most persistent, prolonged labor and thousands of dollars. It is fittingly his monument. Louis Agassiz, the world's greatest teacher lives not in the dead things of museums but in the living, enthusiastic hearts of men and women, boys and girls who study nature.

George R. Agassiz has well stated:

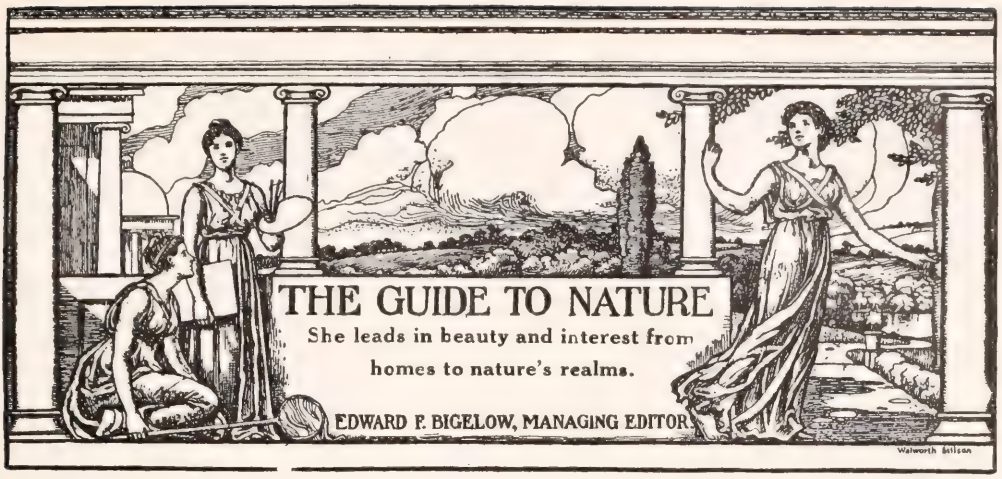
"The elder Agassiz, buoyant and robust, loved appreciation, was fond of teaching, and had a genius for stimulating his students. . . . Alexander, retiring and reserved, had no gift or desire to excite popular interest; he hated notoriety, disliked teaching, and while his activities extended over many fields, his intellectual life was devoted to research. The essential differences between the two men may be suggested in the statement that one was temperamentally a great teacher and the other a great investigator."

The question is, Shall the teacher have as efficient and extensive a monument to his love of humankind as the investigator has to his love of specimens.

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Some of our friends who know only the equipment think that ARCADIA is a place for only experimental science. Other friends who know only the magazine think that ARCADIA is only a publishing house. Some who occasionally come here for pleasure think it is only a picnic ground. We might continue to give a list of the various isolated views and opinions each correct in itself, but falling far short of a true representation of the whole. We have grown rapidly within two years, becoming far more efficient in every respect, and now we appeal to our friends for ten thousand dollars with which to complete the plant and to engage assistants. A hundred thousand could be used to good advantage, but we are willing to demonstrate what can be done with one-tenth of that amount. We ask investigation. Come and examine any and every phase of ARCADIA, look at the ideal location, the equipment efficient so far as we have gone, investigate the bookkeeping, ascertain where the money comes from and where it goes.

The ideals and achievements merit strong financial support.




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut

Subscription, $1.00 a year · Single copy, 10 cents

Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII Guidance for **SEPTEMBER.** Published August 29. Number 4

## The Epoch Making Age of Haying.

Planting time comes now and then, on a day that may be convenient. So it is with wood chopping, ice cutting and other operations on the farm. Haying partakes of the nature of a holiday, yet haying is the hardest of all farm work. It is the holiday spirit that makes the holiday. Haying is a change; it is different from all the other work of the year. In early spring, a day's plowing does not greatly differ from a day's work at harvesting. A day at harvesting ice is not much different from a day at chopping wood. But haying is an epoch-making event. It stands out sharply distinct from everything else on the farm. Then people work that never worked before. All hands share in the excitement from early morning till late at night. The farmer himself is expected to be in the field and to supervise everything in person. At any



JUST STARTING ON THE "TWENTY ACRE LOT"—A BEAUTIFUL PICTURE ON AN EARLY JUNE MORNING.

Copyright 1914 by The Agassiz Association, ARCADIA: Sound Beach, Conn.



THEY KEEP TOGETHER EVEN IN PREPARING THE SCYTHES FOR SHARPENING.

other time he might journey to town, or go to the circus, but not in haying time.

Haying begins early and ends late. It requires a long day. Most farmers supply a luncheon in the forenoon, another in the afternoon, and in old-time hayfields, a little stimulant was not thought out of place at almost any time.

For a man to have molasses and vinegar and ginger in his drinking water when digging potatoes or hoeing corn, would be absurd, but what hayfield is complete without this ambrosial, sour-sweet drink? Other occupations on the farm are plebian and prosaic when compared with haying; that creates another and different atmosphere. Then even the sunlight is of a



AS WITH AN ARMY DEVASTATION FOLLOWS THEIR ONWARD MARCH.

different hue. If you have been in the hayfield in June before the grass is cut, and again perhaps two weeks later, you have observed that the light along the wall, and on the top rail of the crooked fence at the edge of the grove, is different from the light that flickered from the uncut grass. Two weeks in haying time are an age. The world speeds up a bit at the first swish of the scythe. All things have become new. All things now enter into the mild light of the hayfield's Indian summer, and the mower lives in retrospect amid new surroundings. One unaccustomed to the hayfield can never comprehend these facts. They must be experienced. Nothing in human life is equal to hayfield experiences. Something similar to it exists in the life of a nation before and after a great war. The old order of things has ceased, the nation was breathless for a time, then the war ended, and a new era entered. From the earliest sprouting of the grass, when the snows melt and reveal slender bits of fluted green in the exposed spots in the lowlands or on the warm hillside, until it billows in the breeze and blooms like a field of feathery plumes in the sunshine, preparation has been made for this epic of the farm. During May and the early part of June the farmer gathers his forces for that great work; call it poetry or labor or muscular straining or what you will, nothing in the world is like it. All must be done within two weeks; that age passes, the old order of things changes, and one looks back to the spring as a stage of preexistence.

What is it in haying that so completely ushers in the new order, and changes the point of view? It is not merely the work. It is, one might almost say, a hysterical explosion of the accumulated energy of all the farmers. One expects to work until exhausted, to make longer hours, to vie with other workmen in tests of strenuosity. Every workman then seems to think that every other is trying to outdo him, and that every man's hand is against him. He stands alone in a great test of strength and endurance. It is hard to be on good terms with anybody in haying time. An air of suspicion is always present, though the rules may be closely observed. The leader retires to the rear of the line, the second takes his place and so on, until each member of the band has his turn in carrying the head swathe or in raking the rear windrow. Each workman eats a heartier



THE HALF PAST NINE LUNCHEON WAS A NECESSITY IN THE OLD-TIME HAYFIELD.
"Can't expect old fellows to go through till noon with breakfast at six o'clock."



THE MODERN MOWING MACHINE MAKES FEWER MEN NECESSARY.

breakfast in haying time than at every other season, because he believes that the more he eats or, as he would probably express it, the more he can stow away in his jacket, the more work he can do. In the hayfield men are better natured and yet more excitable. A jovial laugh accompanies the ringing of the whetstones on the scythes, yet there is always an undercurrent that sets in steadily toward a fight. The men are keyed to such a pitch and are so suspicious, that a joke or a good-natured sally may easily be misconstrued as an insult.

The hayfield is a battle ground where man strives against the forces of nature, and does it with military precision. He marches onward steadily in battle array to the music of the swishing scythes in the dewy grass. Woe to the man that fails to keep step and strike. He is in danger from all his mates. Only the leader is safe from the challenge of the man ahead. Woe to the man that loses his place by an inch. The ends must be firmly held. If he advances a little too fast he is accused of trying to get out of his place. If he lags a little, the one



REMINISCENCES.

"Now just look at that, will yer? Hay isn't what it was eighty years ago. When I uster stir hay when I wuz a boy, it wuz tall'r'n my head."



MANY HANDS MAKE HEAVY WORK WHEN IT COMES TO RAKING HAY.

in the rear cautions him to make room. The hayfield is like a banquet. It leads off with an appetizer, just a little swishing around in the back yard before breakfast while some are grinding the scythes. This is not real mowing; it is only getting into good condition for mowing—a sort of first course, the consomme of mowing. Breakfast is a light preparation for the day's program. The substantial course is the strenuous work till luncheon time. The luncheon is not always really needed, but it makes a pause in the strenuous forenoon. The first hours of the raking and the pitching of the haycocks on the wagon lead up to the solid part of the banquet that reaches its utmost seriousness in the stowing away in the dusty and stuffy haymow. The dessert follows in the hearty guffaws, the slap on the shoulder, the bantering, the comparison of notes as to who has been "done up" during the



AN EFFICIENT AND INTERESTING METHOD OF LOADING.

day. The sun goes down; the evening meal is served; it is like the vesper hour of Sunday. The day has been an epitome of the year. Then comes the Indian summer of the day; the men sit by the wall under the apple tree; they slowly puff at their pipes; they speak of haying times in the long ago when, as boys, they stirred the swathes. Giants must have lived in those days, for never in later years have swathes looked so big as they looked to the boy that stirred the scattered heaps with his pitchfork.

Uncle Joe tells of the great champion of the hayfield in his day, and Uncle William not to be outdone tries to go him one better in lauding his favorite hero. Uncle William must have been a great man because his greatness increases every time the account of his strength is told.

"Say, fellows, what do you say, it ain't a going to rain to-night, to going down in the hayfield and spreading around two or three of those haycocks under the ash tree?"

"Come on, we'll do it." And there the stories are continued till one by one they are ended in the deepening shadows of the night. The boy sits up and peers into the darkness with eager, hopeful eyes; the boastful veterans of the scythe, the rake and the pitchfork, are sleeping the sleep that comes only after a well-fought battle; the boy wonders why the whip-poor-will calls at night, and wonders if it is really true, if it is really true, if it is really true, and he does not know really what he is wondering about because he has joined the sleepers.

It is the end of the day in haying time. The stars sparkle in the indigo sky, the leaves rustle in the night wind, the whip-poor-will continues to sing the "ballad of his grief."

* * * * * *



COMPARISONS.

The Man in the Center: "He's always a boastin' o' what he did when he was a boy."

The Man at the Right: "Gol darn it! If that hand wan't so lame I could beat yer out now any day and not half try."

The Man on the Ground: "Them two fellers is alwuz tellin' yarns o' what they uster do."

Footnote: The illustrations were taken at the Town Farm because it is only there that one can find the type of veteran so familiar in the hayfield of fifty years ago. Haying was then an event. It was a cooperative bee to which came all the old and young, chiefly the old. Those that worked at no other time worked in haying time; nowadays all this is changed. The picturesqueness is absent. A hayfield with hay tedders and loading machines, lacks the interest and the savor of the hayfield as it was fifty years ago. But in the hayfield at the Town Farm in Stamford, one may find the type of man that gathered around every great farm as a hanger-on. A

half dozen such would not do a fair day's work of one man, yet the farmer felt that he must have a big gang at haying time, he must draft into the service every one able to carry a rake or a fork, even if he did little with it. Those familiar with the hayfields of fifty years ago will see that the pictures are not true of the fields of the present day, but are literally true of the hayfield as the boy remembers it when he heard the whip-poor-will, and dropped into the oblivion of sleep.

* * * *

The Town Farm at Stamford, Connecticut, is under the excellent management of Mr. George W. Lockwood. We gratefully acknowledge many favors from him and Mrs. Lockwood in portraying "The Epoch Making Age of Haying."

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### What I Know about Skunks.

Like the old-time parson I can divide my subject into two parts each with three divisions, and the text is: "A Series of Six Surprises with Skunks." Three of the surprises are in the division of "Boyhood Days" and three in "Some Recent Experiences."

I shall never forget my first experience. I had set a steel trap in the entrance to a woodchuck's burrow over in "the Usher lot" near the old homestead. I had become expert in catching woodchucks in the steel trap and perhaps that fact had engendered overconfidence. At any rate I felt sure that, as before, all I needed to do was to set the trap and to go the next day and whack a woodchuck on the head. With delightful anticipations of another conquest, and club in hand, I hurriedly approached the entrance to the burrow on the morning of the second day. I raised the club, seized the chain and gave it a pull to bring the woodchuck into full view. Whish-h-h! Something had happened and that whish-h-h sound was just over my shoulder by my right ear, but its chief effect was upon my nose though it really did not hit it, for which to this day I am devoutly grateful. The dog came to the rescue but I have forgotten what happened to the skunk. My chief and most vivid recollection is the sickness of the dog and myself.

In the second surprise Daisy and I were again partners. Some one told me that it is easy to dig a woodchuck out of his burrow in winter. All that is needed is a pickaxe and shovel to break through the frozen ground and to dig to the burrow in a series of holes. The dog will tell you which way the burrow runs after each hole is made and then the thing is to dig another hole and so continue until the hibernating mass of fur and fat is found. I dug a hole; the dog inspected; I took the cue and dug another. It was getting to be hard work because the frost was about a foot deep, and required considerable diligent swinging of the pickaxe. But then I consoled myself that the fun of finding a fat woodchuck in winter and catching him fast asleep would be worth all the trouble. At the sixth hole the dog's enthusiasm began to increase. I was encouraged. I decided that one more hole would finish. It did. The dog now in an eagerness amounting to craziness plunged into that hole and pulled out not a woodchuck but a skunk. Again the dog and I were on the sick list. She recovered in an hour. I have not yet fully recovered. The memory is still unpleasant. I wonder if it is true that burying a coat will take out the smell of skunk. Sometime when I go back to the old homestead I think I can find the exact spot in the garden and dig it up and see, but after all perhaps the coat has changed since then, though memory makes it very realistic. That coat is distinct from all others I ever had.

My third experience was with an uncountable number of specimens. Memory is tricky, but it places the figures all the way from sixty to ninety. Perhaps this variation is due to a discrepancy in the stories of Dutch Willie, Uncle Gib and The Dane of the old farm. I mention The Dane last but really he should lead off the line. We were to move the old barn. The jackscrews had been under it for over a day and the rollers were almost in position. Early in the morning The Dane arrived in the kitchen with a bag filled with a mysterious something. He had not "been over" very long, and only a few weeks before arrived at Castle Garden. His knowledge of the English language was limited. In explaining to my grandmother what he had found under the barn, he resorted to object teaching, in connection with one English word constantly repeated as he poured out the contents of that bag by the kitchen stove: "Kitty, kitty, kitty, kitty."

Grandmother's supply of English was not so limited, neither was her object teaching. She kicked the bag of skunks away from that stove and astonished The Dane with a flow of words that must have discouraged him if he had ever contemplated using our language with fluency and rapidity. He retired to the barn a sadder and smellier man. He had not succeeded in pleasing my grandmother but supposed I, a boy, would be more sympathetic. I was more susceptible I admit. Uncle Gib and Dutch Willie came to the rescue with clubs and dispatched the skunks. I did not stay to count them. I should have done so to verify the observations and settle the dispute as to whether there were sixty, seventy-five or ninety. However, who cares for a trifle of thirty or forty skunks when the limit has been passed? There were too many for me and no one who has not had the experience can imagine the awful odor after the death of sixty, seventy-five or ninety skunks with a club. Grandmother did not set the table for Dutch Willie, Uncle Gib and The Dane for several days. They slept in the woodshed and ate their dinner from a basket. This experience with sixty, seventy-five or ninety skunks capped the climax of my trio of boyhood experiences.

Naturalist that I am, for several decades I have been willing to leave further investigations to my brother naturalists. It would be selfish not to leave them some subjects for sole study.

* * * *

A VISIT TO A SKUNK FARM.

I have recently had three more surprises, all associated with one skunk farm. I had read in suburban and country publications that if you fail in the practice of law in the city, or in the discounting of notes, or in the wholesaling of dry goods, you can hie away to Elysian fields, raise skunks, enjoy the delightful zephyrs of spring breezes, the glorious prospects of sunrises and sunsets, and have a fat pocketbook, because skunks' skins bring a good price. But after all I had read it was difficult to mentally picture skunks in connection with anybody except Dutch Willie, Uncle Gib, The Dane and the dog, Daisy. So I was surprised to find that skunks are associated with prosperity. I had known in my boyhood men who obtained a livelihood by catching skunks and selling their skins, but they were not associated in mind with the type of man described in the magazines.

It was an up-to-date automobile that called for me. Mr. Irving M. June of Riverbank, Stamford, Connecticut, had kindly volunteered to show me his skunk farm. I recalled my early impressions and hesitated. It was a little surprising to be taken to the farm in such a fine automobile. That was my first surprise. My next was a bright faced, attractive little girl of about twelve years, my companion in the automobile. I inquired where she lived and her answer was also surprising: "In a tent with the skunks." Of course, I had in mind that barn with the sixty, seventy-five or ninety skunks and that was about the most unexpected statement that could be made to me. Whew! How my heart went out in pity to that girl as I thought of her living with sixty or seventy-five skunks. I thought I was about to repeat the experience of my youth, and then upon second thought decided that there must be something different whereby this bright young girl in white dress and slippers can live in a tent in the yard with sixty or seventy-five skunks. And then it occurred to me that I had not had extended experience with those skunks of my boyhood. The whole number came upon me all of a sudden. Possibly if I had begun with one skunk as had the girl I might have become accustomed to the company and gradually as the family increased I would not have minded sixty or seventy-five. I wondered if my stomach would behave any better than it did that morning when I saw dead skunks in every direction. As I approached the cages with my camera I wondered what I could hold to my nose. But here I met the third and greatest surprise. I could detect not the slightest whiff or trace of disagreeable odor. The whole thing was as delightful as cages of rabbits or, as The Dane expressed it years ago, of "kitty, kitty, kitty, kitty." I wished he might come back and see that here one could freely handle the little skunks and they did not behave as they did when he



"MR. JUNE AND HIS GRANDDAUGHTER HAVE DELIGHTFUL TIMES WITH THESE CHARMING PETS."

knocked them on the head with a club or my grandmother kicked them away from the kitchen stove and expressed herself in a fair portion of the contents of the dictionary. Mr. June and his granddaughter have delightful times with these charming pets. I suspect that it is not the dollars that induce them to keep the pets, but real liking for these animals of curious habits. It shows us that things are not always as bad as they seem. If we do not bring to the skunks steel trap, dog or club they respond in kind, love for love, kindness for kindness, and if we do not fight them they do not attack us in their peculiar manner. Before visiting the skunk farm I had wondered if I had not better take a telephoto lens and at a distance of several rods bring the picture to the camera by magnification, but I found that the telephoto was not needed. The skunks may be freely handled, provided they are not too suddenly seized. A frightened skunk is not pleasant but the "kitty, kitty, kitty" method of handling the animal is not so bad as grandmother thought it was.

Mr. June and his granddaughter have proved that skunks may be safely cared for, and that one may, as the little girl expressed it, live in a tent with them, without a suggestion of odoriferous relations.



"WE LIVE IN A TENT WITH THE SKUNKS."

This tent is in the yard with the skunks, but its occupancy is not made unpleasant by them. There are picturesque surroundings and all the joys of "camping out."

From the commercial point of view I understand that Mr. June has been so encouraged that he will enlarge the yard, extend his facilities and keep more skunks. (He has taken his son into partnership under the firm name of I. M. June & Son.) There undoubtedly is pleasure in doing this, and probably a reasonable amount of remuneration. Such competent naturalists as Ernest Thompson Seton say there is. I understand Mr. Seton has made a liberal profit with his skunk farm. I presume he has fewer skunks than Mr. June, but that the dollars flow in with fair rapidity not from sale of the skunk skins but from his illustrated articles that describe the joys and profits of skunk farming.

Yes, keeping skunks must be profitable. The United States Department of Agriculture says that it is, and gives a list of the benefits of skunks, and tells why they should be protected, and how to raise them for their fur. Doubtless it is profitable, but I cannot bring myself to even think of entering into the competition. In spite of all that the United States Department of Agriculture says of the profits I am large-hearted enough to leave such money making to the other fellows. I could learn to love Mr. June's skunks, but I am afraid, in view of memories of those early experiences, that if I were to raise skunks they might not be such attractive ones as his.

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### Give Old Mother Nature a Chance.

Escape from the shop for a little,
No matter just where it may be.
Go out in the green woods and whittle
Or wander along by the sea.
Fly forth from the turbulent city
And all of its clangerous ills,
And list to the jovial ditty
Or birds on the burgeoning hills.

No matter how much you enjoy it,
Drop work for a moment and dance.
Go out for a little and "boy it"—
Give Old Mother Nature a Chance.
Be noisy and fresh, and be jolly;
Build castles of nothing but air;
Drop worry and blank melancholy—
Escape from vexation and care.

Go lie on the grass and just holler;
Go laze by the babbling streams.
Forget there's a thing called the dollar,
And live in your visions and dreams.
Like mist of the night, like a bubble,
Will vanish unquiet and fear;
And out of the sea of your trouble
Will rise the warm sunlight and cheer.

—John Kendrick Bangs.

## A Day in Old Saybrook—a Real New England Village.

BY CAROLINE CLARK HINTON, NEW YORK CITY.

Nature is true to herself in Old Saybrook, Connecticut. Man has tampered with her very little. She yields the scent of wild clover by the roadside, and on the outskirt of the village, the tang of salt from the marshes.

The village is a natural part of the whole, sleepy, with restful arms reaching over wide stretches of ground, and woods with the undergrowth untrammeled by men's feet.

There are churches in large proportion to the population; the stores smell of must, but carry a surprising



"THE HOUSES ARE GENUINELY OLD."

assortment of dry goods and groceries.

The houses are genuinely old, and are, for the most part, surrounded by gardens of old-fashioned flowers. Side by side grow the tall sunflowers, the gay hollyhocks, the familiar dahlias and asters and appealing forget-me-nots. Fennel also has its place in the garden, and is given as a token of hospitality to those who stop to inquire the way. I counted myself fortunate in stopping a whole day in the old village.

I saw people enjoying life (they have time), men and women growing old gracefully, the women buxom and young in spirit, the men possessed of ripe wisdom and growing upon their chins the long patriarchical beards of Biblical lore.

I remembered the day when I had



"EVEN THE WEEDS GROW WITH AN UNDISTURBED FREEDOM."

ridden my horse down to the ferry's landing, had summoned the old boat from the opposite shore with a wave of my handkerchief, and crossed like slow freight to Old Lyme. Although this was many years ago, I was astonished to find a great change even in Old Saybrook.

Instead of horses and carriages crossing on the old ferryboat, automobiles were seen crossing the fine new toll bridge, while trolleys had appeared and invaded the main streets of both these old villages.

But in spite of trolley cars and automobiles they remain old—much as we imagine were the days of early New England.



"THESE PROLIFIC BLOOMS SPRING UP UNEXPECTEDLY—BEHIND A ROCK, ALONG A MINIATURE CANAL."

Artists have learned to appreciate the value of the natural beauties in and about Old Lyme, and the rides through the surrounding country are full of charming surprises, but there is to me a no more restful and typical New England street than the wide main street of Old Saybrook with the tall elm trees standing guard on each side of the road, and the quaint houses with their flower gardens.

Other villages can boast of a more cultivated beauty, but the naturalness of this spot attracted me and made me linger for a day when I should have been on with my journey.

Even the weeds grow with an undisturbed freedom that gives them a peculiar beauty of their own. (One of the prettiest flowers ever created and classed as a weed is the one called, familiarly, the Queen's lace handkerchief.) These prolific blooms spring up unexpectedly—behind a rock, along a miniature canal, and in the face of the dusty roadside.

Situated so near the sea and the river the air has a poignant freshness mingled with the sweet clover and mignonette.

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### We Influence Boys to Stay on the Farm.

Bettersycoed, Wales.

To the Editor:

I think it undoubtedly true that if farmers and their families were more interested in nature, they would more readily stay on the farm. The rush to the cities is becoming one of the great problems of our time.

I have just returned from Australia which is a very new country with immense possibilities, and yet more than one-third of all its people are gathered in four large cities, disproportionately large, a fact which threatens the future as well as the present of that great community. All over Europe, the same problem exists—how to get back the farmers? One part of the solution certainly rests in the kind of work which you are doing in awakening among boys and girls a real interest in the realities about them.

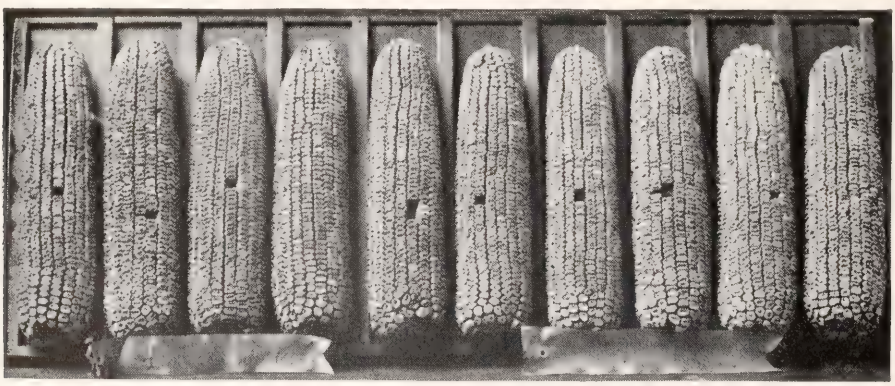
DAVID STARR JORDAN.

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### Growing Corn With Brains.

Corn, like Opie's paints, should be mixed with brains to produce the best results. Mr. G. L. Kerlin of Indiana, won the prize in the corn contest for the grand champion bushel of the world. This award was made at the National Corn Show at Dallas, Texas. This corn was grown on the black and clay soil of Johnson County, Indiana, and is of the Johnson County White variety. The ground was broken for about nine inches deep and thoroughly harrowed and rolled until a fine seed bed was obtained. On account of the weather, the ground was worked down level as soon as plowed.

A Ford touring car was awarded for the best bushel in a variety contest open to the world. Mr. Kerlin attributes his success to well selected and carefully tested seed, to well fed soil, and to proper cultivation through the entire growing season. The accompanying illustrations are lent to THE GUIDE TO NATURE by "Corn" Magazine at Waterloo, Iowa.



CHAMPION TEN EARS OF YELLOW CORN OF THE WORLD AT THE NATIONAL CORN SHOW AT DALLAS, TEXAS.

These remarkably fine samples were raised by Mr. G. L. Kerlin of Franklin, Indiana, and show the result of years of careful selection and breeding. The variety is Reid's Yellow Dent.



GRAND CHAMPION BUSHEL OF THE WORLD.

Such splendid corn as this is not produced by accident. Mr. Kerlin plows deep, practices surface cultivation and uses a good system of crop rotation.

### They Must be Met.

The man who is worthy of being a leader of men will never complain of the stupidity of his helpers, of the ingratitude of mankind, nor of the inappreciation of the public.

These things are all a part of the great game of life, and to meet them and not go down before them in discouragement and defeat is the final proof of power.—Elbert Hubbard.

### September.

The schoolboys thrust,
'Midst whirlwind's gust,
Caps and sticks into circling dust;
Wee billow-breezes gently nod,
Tall asters wild and goldenrod;
When Autumn's color scheme begins,
The bagworm's roughened cocoon spins;
And squirrels throng
The scuppernong,
And leaf-beds build in chestnut prong.

—Robert Sparks Walker.

# THE STARRY HEAVENS IN SEPTEMBER

## The Starry Heavens in September.

BY PROFESSOR ERIC DOOLITTLE OF THE UNIVERSITY OF PENNSYLVANIA.

With the arrival of the autumn months our evening skies again present the transitional aspect between the stars of summer and those of winter. The great summer group of Virgo has quite disappeared and only the extreme eastern borders of Scorpio linger with us, while the very brilliant are those belonging distinctively to the heavens in autumn. Almost overhead there shines out the very brilliant Vega; exactly south is the golden Altair; high in the west rides the great Arcturus, and finally, in the southeast, we see the beautiful, reddish Fomalhaut—the Solitary One—which to the astrologers portended eminence, fortune and power. This last star is the most truly of all an autumn star, since




Figure 1. The Constellations at 9 P. M., September 1. (If facing south, hold map upright. If facing east, hold East below. If facing west, hold West below. If facing north, hold the map inverted.)

and interesting Taurus—the first of the bright winter groups—is just beyond the eastern borders of our evening map, but has not yet entered the early evening sky.

### The September Stars.

Meanwhile, the stars which we see it is only seen in our evening heavens during the autumn months; in December it will withdraw from our skies until another autumn has come.

The beautiful Northern Cross is now at the very highest point of the heavens; the great H-shaped Hercules is a

little to the west of the zenith; the Square of Pegasus shines conspicuously in the east, while in the northwest Bootes, with upstretched arms, is driving the Great Bear before him. If the reader will trace out these four large constellations, he will have learned a wide zone extending completely across the sky from the east to the west; he will find it comparatively easy to afterward add the fainter groups, one after another, until soon he will have learned all of the groups now in the heavens.

Some of the fainter groups now visible are of peculiar interest and beauty. Perhaps the most striking one is the delicate Northern Crown, a chaplet of beautiful bluish stars which lies between Bootes and Hercules, whose brightest star, at C, Figure 1, is known as the Pearl of the Crown. This little group of stars is remarkable for the large number of double stars which it contains, and many of these are true binaries, being composed of two great suns which are very close together and moving rapidly around one another. In the northern part of the constellation there are several wider pairs; those, for example, at A and B can be seen as two stars even in a very small telescope.

Another faint little group is the Arrow, which having been shot at the Eagle by the Archer, is now flying up the center of the Milky Way between the former constellation and the Northern Cross. The Milky Way has many very rich star fields in this region. To the east of Sagitta is the strange little group of the Dolphin, or Job's Coffin, of which the star at E is a double sun, that at D varies in brightness, and that at F is also a remarkable double-sun system of a greenish color, and about this strange center a distant purple-colored sun is slowly moving. If, which is very improbable, there are any habitable worlds in this system, the irregular succession and varying brightness and color of their days must be very striking.

The faint stars between the Dolphin and Aquarius constitute the Little Horse; those between the Dolphin and the star at H form the Wolf; those between Andromeda and Cygnus are the Lizard, and there are several other faint and little known groups which may be found marked on any good star atlas; a knowledge of these is of interest, but is by no means a necessity, to an amateur observer of the heavens.

The three most striking objects for observation with a small telescope now in the heavens are the Great Nebula of Andromeda, at N, Figure 1; the wonderful cluster in Hercules, at S, and the double cluster in Perseus at T.

### The Planets in September.

Mercury is steadily withdrawing from the sun's rays, but as it does not reach its greatest elongation until October 15, it cannot be easily seen during the present month.

Venus remains the most brilliant object now in the heavens, and, though low in the southwest after sunset, it is still conspicuous enough to attract the attention of every observer. It reaches its greatest distance east from the sun on September 18 at 7 A. M.; but, unfortunately, while it is running eastward, it is also moving rapidly southward among the stars, and thus its eastward motion is unable to carry it high into the evening heavens. The observer who watches this world with a small telescope at intervals during the next few weeks will see it narrow very rapidly to a silvery crescent, while at the same time it will increase in apparent size and brilliancy. It will reach its greatest brilliance on October 23, but not until November 27 will it pass to the west of the sun and become a morning star.

Venus during this month will move across the constellation Virgo and almost across Libra. Mars will also move eastward in Virgo, and by the end of the month will have almost reached the eastern borders of this constellation. But this world is now so distant and so lost in the sun's rays that it cannot be viewed to advantage. The sun will finally overtake it, and it will become a morning star on December 24.

Except for the beautiful Venus, the most interesting world now in the evening sky is undoubtedly the great planet Jupiter, which will be seen only a short distance east of the meridian in the south. This beautiful planet will well repay careful study with the telescope. Its rose-colored bands, its sys-

tems of four bright moons in rapid motion about the planet and its own rapid rotation, which carries its ever-changing markings rapidly across the disc, all furnish, perhaps, the most beautiful and interesting of all objects suitable for observation with a small telescope.

During the present month there will be a large number of interesting eclipses, occultations and transits of Jupiter's moons. For example, on September 3 at 7.55 P. M. (Eastern Standard time) the inner moon will pass behind the planet's disc, and at 10.50 it will emerge from eclipse. On the next evening at 7.23 it will enter upon the disc, and on this same night at 1.40 A. M. the outer moon will disappear behind the planet. Two moons only will then be visible in the telescope. On the evening of September 12 the inner moon will emerge from eclipse at 7.13 P. M., and the third moon pass behind the planet at 2.04 the next morning. Similarly, on the 17th at 11.28 P. M. the first moon will pass behind the planet, and on the next evening at 8.35 the first moon will pass in front of the planet, leaving the disc at 11.56. Eclipses, which are so rare on the earth, are very common phenomena on the planet Jupiter.

Saturn has not yet quite entered our evening heavens, though it is but little below the eastern horizon and is a conspicuous object a little after midnight. The reader may remember how this world a few months ago shone out brightly in the constellation Taurus, between the Hyades and the Pleiades. Now, in the course of its twenty-nine-year journey around the heavens, it has moved entirely out of Taurus and into Gemini. It is far to the east of the Horns of the Bull, and will be found near the stars Mu and Eta of the Twins. Its rings are at present well widened out, and it is an interesting telescopic object.

Neptune is also in Gemini, and so is a morning star.

Uranus is a short distance to the west of Jupiter in the constellation Capricornus, but this world is a disappointing object for study except in the largest telescopes.



Figure 2. Recent drawings of the planet Jupiter. The second was made one hour after the first, and shows the change in appearance caused by the turning of the planet and by the real changes which constantly take place upon its surface.

### The New Comet.

The comet discovered a few months ago has now passed around the sun, and during the present month will move through the length of the Greater Bear, directly below the Great Dipper. Up to the present time this has been a bright and interesting object when viewed in a large telescope, but it cannot yet be said whether or not it will become a conspicuous object to the naked eye. Undoubtedly, it will reach its greatest brightness during the present month. It will be nearest the earth on October 2, but even at this time it will be no less than 144 millions of miles away. Yet it is certain that this is a comet of very unusually great size and brightness, and it is hoped that it may, therefore, become a naked-eye object. Its path during September is shown in Figure 1.

### The Eclipse of the Moon.

On September 4 at 7.16 A. M. (Eastern Standard time) the full moon will pass into the earth's shadow and enter

eclipse but the eclipse will not be total, only eighty-six one-hundredths of the moon's diameter being hidden. Our satellite will emerge from the shadow at 10.33 A. M. Unfortunately, throughout the entire eclipse the moon will have set to observers in Europe and in the United States, and so the eclipse will not be visible to us. It may be seen, however, from Asia, Oceania, Australia and from all points of the Pacific Ocean.

On September 23 at 4.34.16 the sun will cross the equator in its southward journey, and at this instant autumn will begin.

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**The High Cost of Living.**

As the world rolls onward the cost of living tends to decrease in the products made by an aggregation of man, and to increase in those completed by the individual workman. This is the logical outcome of mankind's social instinct. We naturally flock together. A man will in a factory accept a wage lower than that that he will accept for hoeing corn in an isolated field. The reason why we seek one another was well expressed by the Boston woman that explained her return from the country, where she had been sent by a philanthropist, by saying, "I came back because I like people better than stumps." You cannot change the people but you can show them the unsuspected attraction of the stumps and the stumps' surroundings. The interests of the factory, of the crowded city or of the village are more easily discerned. They lie on the surface, whereas it needs keen eyes, a seeking heart and an observing mind to discover Mother Nature's secrets. The knowledge of these attractions has increased within the last decade. . Hundreds of families are now living in suburban or in isolated and widely separated homes, where twenty-five years ago there was only one. Within the memory of many that have reached the years of maturity, wealthy people had their homes in the city. Now, owing perhaps to the automobile, they are back in the open, far from their fellows, and having for neighbors the stumps and other things in which wild nature rejoices. The ambitious country boy longs to be a school-teacher; the school-teacher from love of literary matters longs to be an editor; the editor, in touch with wealthy people and seeing their joys, longs to become a banker; and the banker, that recognizes the futility of seeking real joy from artificial things longs to return to the farm. The farm is the ultimate destination. By many the return journey has been made. The city is only the halfway house. It is a strange fact that many country people long to go to the city, and many city people are casting envious glances toward the country and a home among the graceful trees and the green fields.

One cause of the high cost of living is the desertion of their farms by country people, but the reaction is beginning. Farms, abandoned for years, are now being cultivated by others with perhaps more capital and knowledge. Cheering results are already in evidence. The cost of living will continue to increase in city-made products so long as the city is overcrowded and to decrease in those that are country made as the exodus to the country increases, and the city-countryman discovers the beauty and the friendliness of the stumps and their surroundings. But another factor is rapidly entering; the benefits of the social amenities are now obtainable in the country as well as in the city. The automobile and the trolley car are working a revolution in our methods of living, but the one great remaining need at present is to show city people the educational value of Mother Nature. This is our reason for thinking, and it is a good reason for believing that the most important organization on earth just now is The Agassiz Association or it would be if fully developed by proper financing. Long ago Wilson Flagg told us: "Then shall mankind learn that they are unhappy only as they depart from the simplicity of nature, and that they regain their lost paradise when they learn to love nature more than art, and the heaven of such a place as this more than the world of cities and palaces."




SCAUP DUCKS.

### To Recognize a Duck When We See One.

It is common to hear a person tell of seeing a "duck or some such bird, swimming!" Even the more advanced student is likely to receive a vague impression from the first sight of a swimming bird, whether duck, coot, loon or grebe; although an ornithologist would scarcely use the term "such bird," knowing them to be not intimately related. The uncertainty is due to a wariness which these birds have in common; they are usually seen at such a distance that their forms are indistinct, and their colors obscure.

We cannot here describe the specific differences and characters of the sixty or more American birds included in the groups under consideration. We should first learn to distinguish the main groups. Naturally the question, "Is it a duck?" goes before, "What kind of duck?"

The accompany illustrations should be sufficient to indicate plainly the resemblances and the differences of form and color, which we wish to notice.

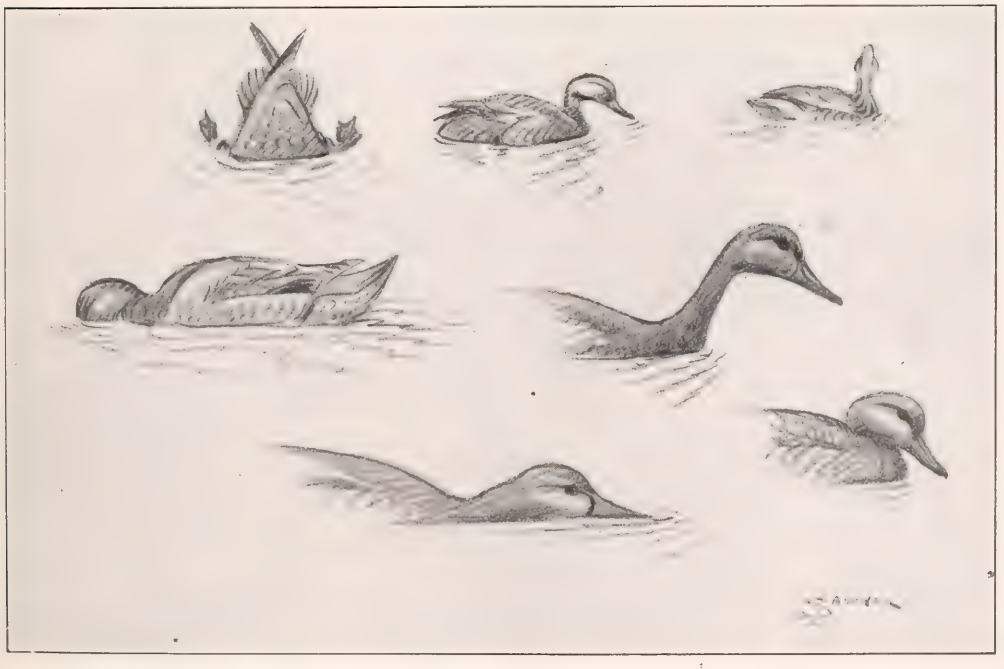


WILD DUCKS IN ORDINARY FLIGHT.

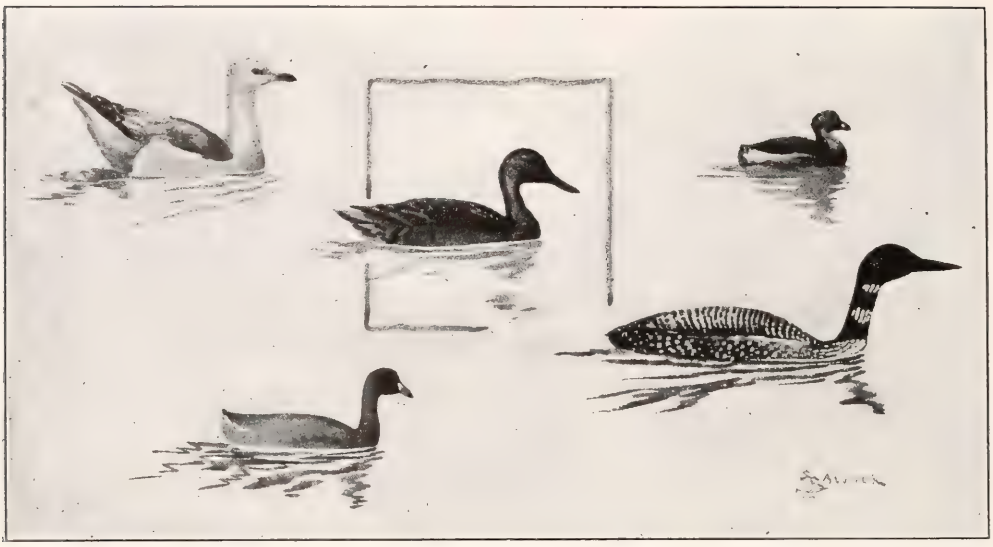


LIFE SKETCHES OF DUCKS IN FLIGHT.

Size may at times give a clue. The differences in size between grebes, ducks and coots, are not marked when the birds are alone, as is usually the case, so that direct comparison is impossible. The smaller ducks, such as teal, have practically the same size as pied-billed grebes. Form is a surer guide. One can usually approach any of these birds closely enough to recognize them by their outlines. When in doubt approach the bird till it flies or dives; its actions should furnish the necessary clue. If it persist in diving refusing to fly, the chances are that it is a grebe or a loon; size should tell you which.



LIFE SKETCHES OF DUCKS IN THE WATER.



WILD DUCK AND BIRDS SOMETIMES MISTAKEN FOR DUCKS.

Gull. Duck. Pied-billed grebe.
Coot. Loon.

These birds have developed their diving and swimming powers at the expense of their wings; they are as ready to dive and swim as they are reluctant to fly. When they do rise from the water it is with great effort; but once fairly launched in the air, the flight is not unlike that of the ducks, for which birds they might then be mistaken if at a distance. Loons are oftener seen in flight than grebes; the latter scarcely ever fly more than a few hundred feet at most, and seem to have difficulty in keeping clear of the surface.

The numbers in which they are seen at a given time and place may in a loose way be diagnostic of the groups. Several grebes or loons may be found more or less closely associated, yet they do not congregate in flocks. Ducks, geese and coots are gregarious. The sight of a flock of sizable, swimming birds, therefore, somewhat restricts the question of identification. We are little concerned with geese, because their relatively great size distinguishes them from all but loons; from loons they may be distinguished by the fact that they do not dive, and usually are found in flocks.

It remains to consider color and marking. These so far as they enter into our problem, as limited in this article, may usually be regarded as of secondary importance. Bright colors are confined almost exclusively to the ducks—more precisely, to the drakes; this is also largely true of distinct markings of any kind, or such as are likely to be observable in the wild bird; the loon, however, is distinctly black and white; yet, because the pattern has a rather finely checkered effect, the fact is not noticeable at so great a distance as it is in the case of the golden-eye and the buffle-head drakes.

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Many a time at the sound of the wood-thrush's melodies have I fallen on my knees and there prayed earnestly to our God.—Audubon.

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My plea for the large open-air contact of children with things as they are, the heritage of every well-nurtured farm-boy, of every child who has stood on his feet in the presence of natural objects.—David Starr Jordan in "The Stability of Truth."

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Men give me some credit for genius. All the genius that I have lies just in this: When I have a subject in hand, I study it profoundly. Day and night it is before me. I explore it in all its bearings. My mind becomes pervaded with it. Then the effort which I make is what people are pleased to call the fruit of genius. It is the fruit of labor and thought.—Alexander Hamilton.



A GOOD PHOTOGRAPHIC STUDY OF LILIES OF THE VALLEY.
By Mr. Nathan R. Graves, Rochester, N. Y.

**Remarkable Flash-light Photography.**

"Country Life in America" in its issue for July publishes a remarkable article by William Nesbit, entitled, "Night Hunting with Flash-light and Camera." He shows a racoon in the act of photographing itself by exploding the flash-light connected with the bait, and by means of another camera he exhibits the entire apparatus, flash-light, camera, danger signal, and the racoon in action. The picture is unique and amazing.

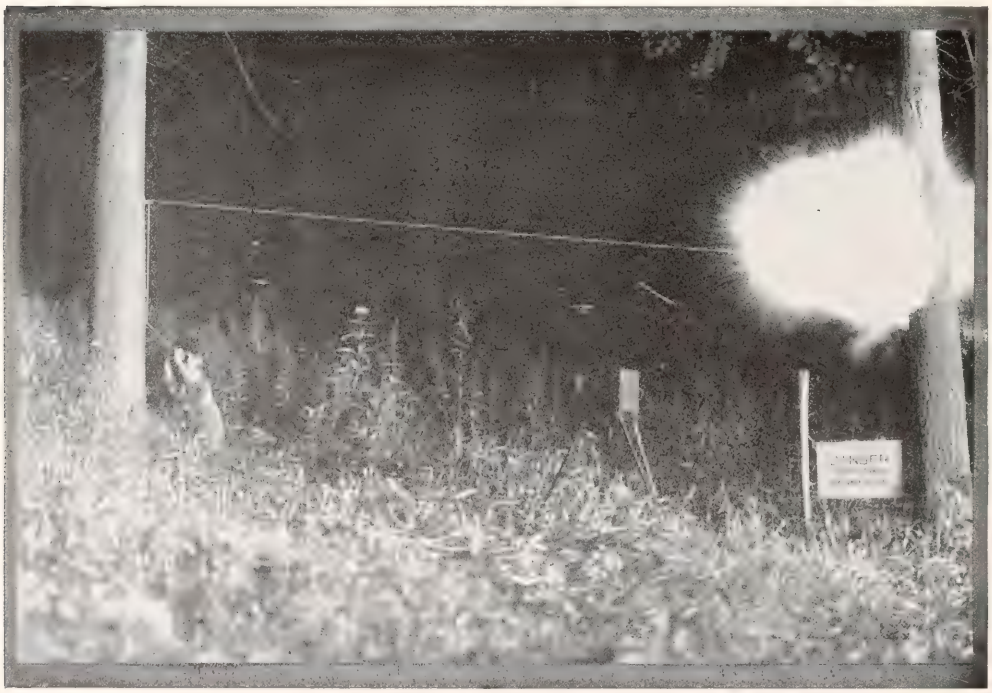


THE 'COON'S "OWN" PHOTOGRAPH.

By a remarkable coincidence a photograph of a skunk shows the white of the tail above the white sheet intended to make the skunk more conspicuous, so that the animal appears in front of the white background, and the white tip of the tail in front of the black background of the night. We feel sure that many of our readers will want to read the article which contains other interesting photographs. We are indebted to Doubleday, Page & Company, Garden City, Long Island, New York, for their courtesy in giving us the use of the three accompanying illustrations.

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It may interest you to know that I am greatly pleased with your magazine and consider it one of the most instructive periodicals that I have ever read. Allow me to compliment you on the many improvements you have made during the past year, and I assure you of my best wishes for the success of your magazine and the Association.—T. Walter Weiseman, Emsworth, Pennsylvania.



THE PROCESS BY WHICH THE 'COON TOOK ITS "OWN" PHOTOGRAPH.

A second camera was so placed that the same flash operated both shutters. Halation about the animal, caused by reflection of the flash by the lens, was overcome by electrically igniting a second charge of powder out of view of the second camera and behind the flash seen in the picture.



REMARKABLE PHOTOGRAPH OF A FLYING DUCK.
By Ernst Niekergall, Sandusky, Ohio.

Whither, midst falling dew,
While glow the heavens with the last steps of day,
Far, through their rosy depths, dost thou pursue
Thy solitary way?

There is a Power whose care
Teaches thy way along that pathless coast—
The desert and illimitable air—
Lone wandering, but not lost.

All day thy wings have fanned,
At that far height, the cold, thin atmosphere,
Yet stoop not, weary, to the welcome land,
Though the dark night is near.

He who, from zone to zone,
Guides through the boundless sky thy certain flight,
In the long way that I must tread alone,
Will lead my steps aright.

—"To a Waterfowl" by Bryant.

## The Advantage an Anastigmat Lens Has Over an Ordinary Rapid One.

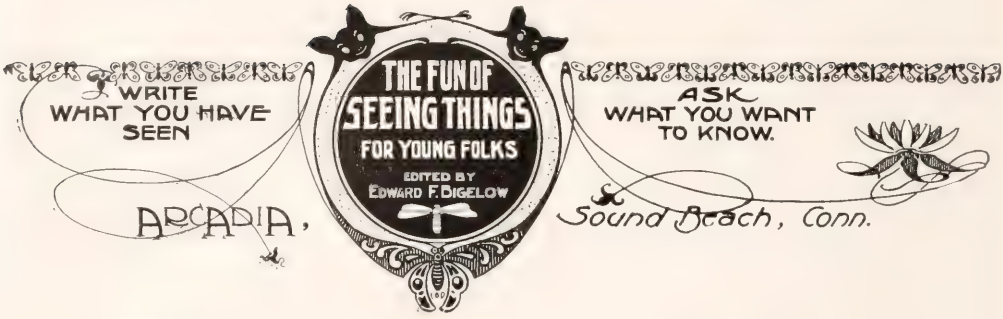
Fix up flat against a vertical wall a large sheet of newspaper, and place the camera opposite the center. Now focus the center of the sheet, and then focus some object in the corner of the ground-glass, using an ordinary lens and large stop. If you notice very carefully you will find that when the vertical lines are sharp the horizontal lines are not sharp, and vice versa. But if you repeat with an anastigmat, both vertical and horizontal lines in the corners of the ground-glass are (or should be) equally sharp at the same time. But by stopping down the ordinary lens one can get horizontal and vertical lines both sharp at the same time. What it comes to in practice is that the anastigmat with a large stop gives as good definition in the corners of the plate as an ordinary lens does with a small stop.—The Photographic Times.

## A Remarkable Coincidence.

Some animals lose their tails in traps, but this skunk "kept" the tip of his by placing it against the sky instead of the white background.



A SKUNK PHOTOGRAPHING ITSELF.
This skunk considerately posed so that its white pointed tail might be silhouetted against the blackness beyond instead of lost in the whiteness of the painted board.




### Amusing Fourfooted Feeders.

Among all the amusing and enthusiastic little feeders, probably young pigs would take first premium. It is difficult to obtain good photographic records of the actions of such pigs. The mother usually selects a shady place for the regular meal, so that even the fastest lens will not record all the motions of the lively youngsters.

Mr. Ernst Niebergall of Sandusky, Ohio, sends us the best collection of such photographs that has ever come to our desk. He shows not only the whole family in lively action, double decker style, taking from both rows of supply, but gives us details of five lively little fellows, and then shows what he calls a pig's kiss, which is supposed to be what the term implies, as it seems to be an evidence of appreciation between mother and offspring.

Those who have watched little pigs in the pen with their mother, have often noticed the affectionate manner in which the youngsters run up to their stolid, sedate parent and rub noses. This seems to be the only method by which the little fellows can express appreciation of their mother's care. The mother sometimes uses another method to express her appreciation of her numerous offspring. She will rush in a threatening way at an intruder with whom she is unacquainted.



IT IS FUN TO WATCH LITTLE PIGS AT FEEDING TIME.

Among the strange perversities of nature, perhaps the most difficult to explain is why the faithful mother sometimes has her affection so thoroughly diverted in the wrong direction that instead of tenderly caring for the little pigs she eats them. We wonder at this strange freak of nature, which occurs not only among sows but even among rabbits and some other animals. There are times when a rab-




THEY GROW WITH PLENTY TO EAT AND MUCH PLAY.

bit must be separated from her young or she will eat them, and again there are times when she will kick them to death if kept too long with them in the same cage. Under normal conditions, and in most cases, there is no more patient and apparently affectionate mother than the rabbit, but sometimes she seems to become temporarily insane.

If one were disposed to philosophize, other remarkable anomalies could be found outside of the pigpen. Love sometimes suddenly becomes hatred. Joy may become hysterical. The border line between sanity and insanity is narrow.




THE PHOTOGRAPHER LABELED THIS, "A PIG'S KISS," AND IT REALLY SHOWS AFFECTION OR SOMETHING AKIN TO IT.

## The Luna Moth.

BY EDWIN L. JACK, PORTLAND, MAINE.

The accompanying photograph is of the luna, one of the most beautiful of



THE LUNA MOTH.

our common moths, one with which every nature lover should be acquainted. The predominating color is a beautiful blue green. At the top of the front wings is a band of purple which grows narrower as it extends down the edges. Near the top of each wing is a small, transparent marking edged with purple, black and a faint touch of red. The hind wings end in long, beautiful, curved "trailers." The body is snowy white, and the antennae are light tan. It is rarely found about cities, but frequents dark, damp woods. In June it may frequently be found on oak and birch trees, as its caterpillars feed on the leaves of these trees. The cocoons fall with the leaves, and remain on the ground through the winter. The moth emerges on the ground and climbs the trunk of the tree to dry and spread its wings. If one is interested and cares to observe luna's life history, the approaching midsummer offers an opportunity to search for the caterpillars. In August these may be found feeding on the leaves of the oak, the birch and the willow. If you are fortunate and find several take them home, place them in a box and feed them with leaves fresh from the tree on which you found them. Each will soon spin a silken cocoon that should be kept in a cool place through the winter and brought into the warm air in the early spring. Sometime in May or in early June, the moth will emerge and, if you are fortunate enough to witness the emergence, you will be well repaid for your trouble in caring for the cocoon as you will then see one of the rarest sights that nature has in store for you.

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## Virginia Creeper.

BY CHARLES H. CRANDALL, STAMFORD, CONNECTICUT.

When I found a mass of woodbine, or Virginia creeper, to-day, and found it fairly alive with honeybees rioting amid the profuse clusters of almost infinitesimal blossoms, I resolved to volunteer as attorney for the bees, as well as for this beautiful vine, and to write you a word in their praise. For years it has been a standing order to my men at "Idylland" to spare the woodbine wherever found and not confound it with poison ivy, which is under perennial condemnation. Now that I know how much the bees think of my favorite creeper, I am glad that I have tried to protect it. I get the most delight from the vine as it glows in the autumn under Jack Frost's magic touch, with those deep rich reds that transform our grey stone walls into pyres of flame, or illumine like sunset fires the trees that it chooses to climb. In "Stamford Highlands" I found it:

"When woodbine leads its flame aloft
The cedar spires of green,
Or clematis, a snowy arm,
Upon the wall doth lean."

And in "An October Ride"

"The woodbine, like a lover, wound
The blushing oak with rosy arms;
The red leaves, fluttering o'er the ground,
Like couriers spread the frosts' alarms."

Let us all join in protecting and encouraging the Virginia creeper, a thing of beauty and a delight to our friends, the honeybees.

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For it may take a lifetime of the severest labor to find out a new fact. No truth comes to man unless he asks for it. It needs years of patience and devotion to ask a genuinely and radically new question. He is already a master in science who can suggest a new experiment.—David Starr Jordan in "The Stability of Truth."

### The Baby Robin.

Millersburg, Pennsylvania.

Dear Editor:

While playing in our back yard I heard a great noise and flapping of wings and found a baby robin just learning to fly. I held out my hand to him and he was not at all afraid of me and hopped on my hand. I was holding the little bird when the camera man saw us and took our picture,



IT WAS FUN TO WATCH THE LITTLE ROBIN.

and while he was taking the picture the mother robin came with a bright red berry and called to the baby robin. He was very hungry and hopped away to his mother She put the berry in his bill and then flew away to hunt more berries. The man set the little robin on a small tree and took his picture all by himself. We left him sitting on the tree and had great fun watching the old birds feeding him and teaching him to fly.

PAUL GRUBB.



A NEARER VIEW OF THE ROBIN.

### Two United Oak Trees.

BY C. D. ROMIG, AUDENRIED, PENNSYLVANIA.

This picture shows two oak trees which have become firmly united at a joint seven or eight feet from the ground. One is erect, while the other leans with the branches extending toward the east. Each is about nine inches in diameter near the ground, and about two feet apart. They seem



TWO OAK TREES THAT GREW TOGETHER.

to flourish about as well as others in the same woods. They grow near the north corner of Schuylkill County, Pennsylvania.

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It is unfortunate to be blind for lack of eyes, and unfortunate also to be "blind" with good eyes.

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### A Heterogeneous Potato.

Stamford, Connecticut.

To the Editor:

Under separate cover I send you two negatives of the potato about which I told you yesterday. I hope the curious formation will be of some interest to you and that you will add it to your collection of novelties.

Yours very truly,

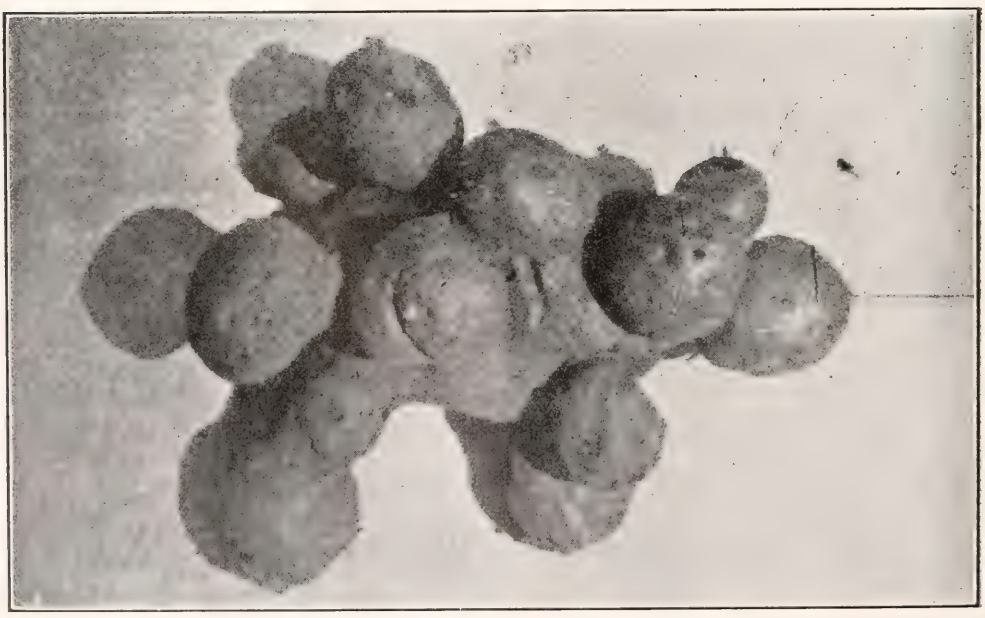
SYLVANUS M. ARCHER.

This is indeed the strangest collection of conglomerate, heterogeneous potato that I have ever seen. It seems from experiments that I have made with potatoes that these are not growths from an original stem. The smaller potatoes I infer are growths from the larger one. As has been demonstrated in the laboratory at ARCADIA many potatoes may grow from one potato without reducing the bulk of the original and, in appearance, not lessening at least its crispness and its good quality.

### Let Us See the Beauty and Interest.

How few people there are who use their eyes as they might, and how blind are many of us to the beauties with which we are constantly surrounded, which we do not see and cannot appreciate because our eyes are not educated to see and our minds have not been cultivated to appreciate these things.

The constant association with nature leads to a more natural life and a better appreciation of the beauties and wonders of nature itself, and consequently must of necessity elevate and raise the man. The continued contemplation of works which are in themselves perfect, leads to the cultivation of a higher tone of mental and moral development and the desire to reach to the same perfection which characterizes all the works of the Creator. They necessarily raise the individual above what is petty and low to longings for higher aims in life. The contemplation of what is always beautiful leads to a higher aspiration for what is in itself beautiful. All that one finds in nature is beautiful and true and well adapted for the purposes for which it is designed.—Professor Thomas Eggleston.



ONE POTATO THAT SEEMS TO BE "A WHOLE FAMILY."

**A Wide Range of Estimates on Number of Bees.**

Here is an illustration of the largest swarm of bees of which I have ever known. The cut was lent to THE GUIDE TO NATURE by "Gleanings in Bee Culture." The mammoth swarm was the product of one queen on twenty-four combs, and issued in June at the apiary of J. W. Davidson, Yorktown, Indiana. I thought I had had experience with some large swarms of bees and I had heard fellow apiarists tell of their experiences, but never have I seen anything quite equal to this. The illustration shows that it is at least three times as large as the average of very large swarms. Who can even estimate the number of bees here congregated? It seems as if there must be well on toward a half million, but how could one queen, even if she had plenty of room, lay eggs to produce that astonishing number? We have always regarded 4,000 eggs a day as high capacity, but that would give only 120,000 for thirty days, and 360,000 for three months. It seems that we must revise the estimate of the number of eggs a queen bee can lay.

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A copy of the above was mailed to "Gleanings in Bee Culture," and they regard it as far beyond a correct estimate of the number of bees and base their arguments upon their experiences in weighing bees. The question seems to be, what is the weight of such a swarm? The reply from The A. I. Root Company was sent to Mr. Davidson and he writes as follows:



HAS ANY ONE EVER HAD THE FUN OF SEEING A LARGER SWARM OF BEES?

Yorktown, Indiana.

To the Editor:

In reply to your estimate of the swarm would say stick to your figures for the photograph does not do justice to the swarm from the fact that those bees were sprayed with water to hold them until the photographer came four miles to make the negative. Before those bees were wet each part of the cluster appeared larger than a nail keg, and the whole looked like three bears standing side by side. There were at best as many bees on the ground as are shown in the picture. The man that made the negative had such a fear of bees that he would not get close enough to them to get all of the swarm, and focused above those on the ground. So you can see that the photograph does not do justice to the swarm from two points. If this swarm had been in one cluster it would have been as large as a flour barrel. I honestly believe that it weighed fifty pounds. Mr. Root says

it appears large from the fact that it is on a large fence post and the branch of a tree. When he considers the wet condition of those bees he can understand the enormity of the swarm in a normal state. He also says there is nothing abnormal about the swarm because they have the parent colony weak in bees, not so in this case for there were plenty left for an eight frame colony. In regard to the ability of a queen in a good season under favorable conditions, I am not able to say what one can do.

Later I will give you a better statement in regard to the management of those bees to get such a large swarm from one queen.

Yours respectfully,

JAMES W. DAVIDSON.

### What Causes "Salt Water?"

Most rivers contain a little salt which they get from the earth through which the water soaks before it trickles into the river. If the lake into which a stream runs has an outlet the lake is not much more salt than the water that runs into it. But if the lake has no outlet either at or below the surface, the water disappears by evaporation. In this case the salt is left when the water passes off in vapor, and the lake becomes more and more salt as time goes on. In a similar way, the rivers of the world carry salt into the ocean, and this has been going on for so long that the ocean has become "salty." The salt has been left in it while the water has been continually evaporating, going back through the air to the land as rain and thence carrying more salt to the sea. The sea probably extracts a little salt from the rocks of its bed. Some lakes, such as the Dead Sea and the Great Salt Lake, are much more salt than the ocean.—H. L. W.

The foregoing from a college professor was submitted to the Department of Geology of various universities and met with approval. Professors whose names are given sent the following which practically expresses the same thing in a little different form. We are publishing this matter explicitly and authoritatively because the editor was appealed to for a decision of the much debated question. Strange to say the personal authoritative and unanimous statements of the professors of nearly all the leading universities do not agree with some of the encyclopedias that teach that the ocean was originally salt.

Professor F. Bascom of the Department of Geology of Bryn Mawr College writes as follows:

"It might be further stated that not absolutely all of the salt in the ocean has been brought to it by rivers; those who hold to a primitive hot ocean conceive of it as highly charged with salts (among them sodium-chloride); even with the conception of a primitive cold fresh-water ocean, ocean water will have a chemical action on rock formations and, by decomposition and solution, will form salt. Thus the amount of salt now in the ocean, including also the salt that has been precipitated from the ocean, is not a measure of the discharge of salt to the ocean by the rivers.

"Salt lakes are of two classes: those, like the Great Salt Lake, which have descended from a fresh-water ancestor and have become salt by concentration owing to an excess of evaporation over inflow (owing to increasing aridity of climate), and those, like the Caspian Sea (lake), which originate from the isolation of a portion of the sea and are salt from the outset."

Professor J. F. Kemp of the Department of Geology of Columbia University thus puts it:

"Scientific people generally believe the ocean to be salt because for a very long period of time the rivers have been conveying to it various salts in solution. The ocean waters are constantly evaporated by the sun's heat and form the clouds and supply the rain. No dissolved matter, however, passes into the air with the vapor so that it constantly increases in the waters left behind. In the end the ocean has become salty to the taste. The lake waters and the river waters being fed by the rains are almost always fresh. If, however, your correspondent could sometime have a swim in the Great Salt Lake in Utah he or she would find that it is much more salty than the ocean. Since it is a confined body of water with vigorous evaporation it has become very salty. A swimmer floats high out of the water, and this he cannot do in the ocean."

Professor J. C. Branner of the Department of Geology of Leland Stanford Junior University writes as follows:

"Nearly all streams have a little salt in them that they have dissolved from the land, but there is not enough of it to be noticeable when we taste the water. If we boil down or evaporate a couple of barrelfuls of this fresh water to a teaspoonful we should find it salty. If water flows into a lake so fast that the lake keeps overflowing, the water remains fresh just like the streams that feed it. But if the water flowing into any basin evaporates as fast as it flows in, then the salt is left behind and the water left in the basin gets to be more and more salty. A lake made by evaporated water does not overflow its basin in the ordinary sense, because the water escapes or flows into the air instead of flowing out as a stream.

"This all applies to the ocean as well as to a lake. Lake Ontario empties its water through an outlet into the ocean, and as the fresh water keeps coming in, it remains fresh. The ocean empties its water into the air to make rain and snow, and the salt keeps concentrating in what is left behind."

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### Giving Freedom to Young Rabbits.

Willie Blatney of the Golf Clubhouse recently brought to ARCADIA seven little cottontail rabbits in a nest made by the mother from fur torn from her own breast and mingled with a few dry grasses. The little creatures were, indeed, a delight. It made one wish to possess them all and to see them grow up, but they were not quite old enough to feed themselves. Mother's milk would be necessary for about a week longer. To his inquiry as to what he should do with them, the reply was, "Take them back and put them where you found them. Arrange the nest as carefully as possible, and put the little ones in it." That we understand was done, no doubt to the satisfaction of cottontail mother.

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I think it is true that many more country boys would remain in the country if they could read early the book of nature.—J. H. Skinner, Dean, School of Agriculture, Purdue University, Lafayette, Indiana.

### Was This Bird Crazy?

BY F. R. GORTON, MICHIGAN STATE NORMAL COLLEGE.

Early in the spring our attention was attracted to the peculiar work of a robin bent on building a nest on the iron fire escape behind our laboratories. It was first noticed that the bird seemed unable to distinguish between the steps on account of their similarity, and was placing nest material first on one and then another until four or five nests had been started. As the photograph shows, two of these nests were completed, and the same difficulty encountered when it came to laying the eggs. The robin did not appear to notice the trouble until the first three eggs had been placed as shown. She then gave up the task as too difficult a problem for a bird mind to master, and left the place to make a home elsewhere.



THE BIRD SEEMED UNABLE TO DISTINGUISH BETWEEN STEPS.

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Am pleased to say the last edition of THE GUIDE TO NATURE seems to be by far the best edition you have ever gotten out and if you can keep up to this high standard I am sure that THE GUIDE TO NATURE will meet with great success.—F. A. Bartlett, President The Frost & Bartlett Company, Stamford.



"WHEN IN THE COURSE OF HUMAN EVENTS"

**Give Me Your Attention.**

A Stump Speaker declaiming there is a lot of fun in seeing things in the forest.

Cut by courtesy of the Ansco Company, Binghamton, N. Y.

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### The Chief Value of Nature-Study.

The chief value of nature-study in character-building is that, like life itself, it deals with realities. The experience of living is itself a form of nature-study. One must in life make his own observations, frame his own inductions, and apply them in action as he goes along. The habit of finding out the best thing to do next, and then doing it, is the basis of character. A strong character is built up by doing, not by imitation, nor by feeling, nor by suggestion. Nature-study, if it be genuine, is essentially doing.—David Starr Jordan in "The Stability of Truth."

### "Not 'Schooly;' Not 'Museumy.'"

Perhaps neither of these words is in the dictionary; but by analogy the reader will readily understand the meaning of the terminology. I firmly believe that these two newly coined nondescript words describe two of the greatest obstacles to a heartfelt interest in nature as recreation, uplift and real benefit. I do not know of any other words or of any combination of words that expresses exactly the meaning of schooly and museumy. If the reader can suggest one we shall be glad to have him do so, but until he does, we shall say of the new department, "The Fun of Seeing Things," that is neither schooly nor museumy.

From thirty to forty years ago, in the early days of The Agassiz Association, Chapters sprang up in every city and little country village. Boys and girls gathered together for the real fun of seeing things. To them it was play. In later years, the educators were attracted and said, "If this is a good thing, let us give them plenty of it. It arouses their interest." Then these learned persons took hold and so saturated the whole thing with the school system that it soon became schooly. They took from the child much of the original spontaneity and especially the vital element of pleasure. They made it a task. Chapters of The Agassiz Association still exist in all parts of the country and many of the Chapters are doing good work, but it is to be regretted that so large a number do it in the schooly spirit. They have lost the fun of seeing things, and it is that departed but essential element that this new department is trying to restore. Large numbers of our Chapters at the present time are in schools, some in the kindergarten, others in the university, and usually they are presided over by the teacher of nature study or by the professor of natural science. Nature has an educational value. It is well to develop the work along those lines. All honor to the faithful teachers of nature study and the hard-working professors of science, who are not only bringing out the educational value but in addition much of real enjoyment and real satisfaction. An outing from the most systematic university in the land under the leadership of an enthusiastic professor of natural

science, will incidentally have much fun in it. There will be many a pleasant little episode in the trip, but in spite of this, there is a danger, and it is against that danger that we wish to issue a caution, of making it too schooly. There was a time when a lecturer on almost any phase of nature or of natural science could crowd the largest hall or opera house with an audience that went not for education but for enjoyment, for the fun of it. There is real fun in listening to a talk accompanied by experiments, for example, with liquid air. What greater fun than to see a man boil a kettle of water on a cake of ice? But unfortunately in some unaccountable manner the fun seems to have been taken out of such portrayals. The moving picture show of love scenes and burglar escapades is taking the first place in the fun of seeing things.

In the word museumy is comprised another great reason why nature in popular estimation does not come to her own. This is the sensational element. I know, from many years of experience in editing a department in a leading magazine, that the demand is more for the abnormal and the startling, for the freaks and the deformities, such as one might find in a dime museum, than for "commonplace nature with uncommon interest." A museum seeks a variety of natural objects, classifies and arranges them in thorough, systematic order. It also has a few unusual things that may be called museumy. There is the mummy from Egypt, the totem pole from Alaska, and certain marvels from other countries. These have their place and that place is in a museum. There is another kind of museum that is in rivalry with the moving picture show. It is a collection of freaks, the fat baby, the living skeleton, and the snake charmer, accompanied by pom pom music and gaudy banners. That is the dime museum. When a magazine or a writer on nature study seeks only the abnormal, the startling things, the freaks, we are reminded of the fat woman, the bearded lady and the tattooed man, to say nothing of the wild man of Borneo. Such magazines and writers are museumy.

This department, "The Fun of Seeing Things," is not schooly and not museumy. It is to be real fun, not merely pleasure. A boy does not go fishing for pleasure; he goes for fun. A man does not go hunting for pleasure; he goes for fun. But the naturalist is none the less a fisher or a hunter, yet he should go not as to a school task, not as to a university task, not to seek out the abnormal things, but for the delight of using his eyes in a world filled with myriads of wonderful and beautiful things, for every natural object, when looked at aright, is wonderful and beautiful. I would much prefer to see a beautiful normal baby than to see the one portrayed by a recent street banner and weighing some hundreds of pounds. And, kind reader, you agree with that preference. Then I am sure that such a department in this magazine that will endeavor to be not schooly, not museumy, will enlist your hearty cooperation.

I recently spent considerable time in the elaborate private laboratory of Mr. Frank J. Myers of Bethelem, Pennsylvania. Mr. Myers is a thorough student from the amateur point of view of all forms of pond life. He placed a Gammarus under the lens and explained a variety of details in its classification and structure, but sedate as I ordinarily am, the one thing that attracted me toward that interesting form of animal life was the manner in which it scampered around the ring in which it was confined. The fun of watching the mule and the clown in the circus ring? The sight of that Gammarus tumbling, scrambling around the edge of that life box was real fun. It first produced a smile and then it brought a laugh, and I confess that I had to leave the microscope holding my sides with laughter at the astonishing, ridiculous antics and ring performance of that Gammarus. Honestly, reader, I have forgotten all about the classification. I do not believe I could tell how many legs that creature has, but so long as I live I shall not forget, and probably neither will my host, how I laughed at the fun of seeing that ridiculous microscopical scampering. It was real fun and if anything had been worrying me that day I am sure that all would have been forgotten, thanks to Gammarus. Now what that Gammarus was to me I wish I could make nature

to every boy and girl, every man and woman—not schooly, not museumy, but real fun, real uplift, real recreation and enjoyment after the regular duties of life and the tense straining and struggling for a livelihood. Let the teacher of nature study and the professor of science get all he can of education from the realms of nature. We will gladly help him in his efforts. Let the dime museum show the fat baby and the snake charmer, and we may go to see them, but for this department we are going to have the fun of the Gammarus, and the real fun of associating with the ordinary wholesouled man, whom we are sure we shall find as enjoyable as the freak with the tattooed skin.

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### A Parody of Certain "Nature Talks" to the Young Folks.

"Good morning, my precious dears!" exclaimed Professor Snodgrass as he briskly entered the classroom and took his place on the platform before his small pupils.

"I am charmed beyond expression to see so many bright faces looking up into mine this transcendent autumn morning—faces which are athirst for knowledge, and yearning to explore the great mysteries of nature. Now, my little lambs, you will observe that I hold up before your gaze a common goblet which, however, is not empty. How many of you can tell me what is in the goblet? Ah, I see four chubby hands raised! I will ask Willie to tell me what is in the goblet. What's that? Willie says 'nuthin',' which is wrong, and I may say in this connection that there is no such word in the English vocabulary as 'nuthin'"; 'nothing' is the correct expression.

"Myrtle, you may tell me what is in the goblet? Myrtle says 'water' which is correct. Myrtle's aptness has been a source of rare delight to me during these lectures I will now ask Myrtle to tell me of what water is composed. Eh? Myrtle says it is composed of drops, which shows a woeful ignorance on Myrtle's part. I had in mind the chemical ingredients of water, and it is surprising to learn that any member of my class should not know that water is composed of hydrogen, two parts, and oxygen, one part.

"We will now proceed to the uses of water: Tommie may tell me what water is good for. What's that? Tommie says it is good to fish in! Eh? He also says it is good to squirt out of a hose, and a good thing for a boy not to wash his face in! That will do, Tommie; you need not mention any further uses of water at this time, but instead you may stand with your face in the corner and reflect upon the ridiculous things you have said.

"Mary may now tell me what water is good for. Mary says it is good to wade in and to fall on umbrellas, and to float boats on! Mary may take her place in the corner with Tommie. Willie, you tell me what water is good for. Willie says it is good to go swimming in, and good to skate on in the winter time! Willie may also go into the corner. I am pained and shocked beyond expression at the imbecility of you young hoodlums who sit before me! Not one of you seems to know that water is to drink! Drink, I say! Do you hear? Drink! Now go home and learn something!"

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Learning and wisdom are not identical, they are not always on speaking terms. Learning looks backward to the past. The word "learn" involves the existence of some man as teacher. Wisdom looks forward to the future. In so far as science is genuine, it is of the nature of wisdom.—David Starr Jordan in "The Stability of Truth."

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Scientific pursuits are among the highest that can occupy the attention of men; to the students of nature in her several kingdoms the human race owes a debt of which the imagination can hardly estimate the value. But when our teacher leads us, as we follow his direction, from the consideration of the works of nature to a reverent and loving appreciation of the glorious God of Nature, Possessor of Heaven and Earth, the life of the student seems to assume an almost ideal character. — Reverend Morgan Dix, D.D., Rector of Trinity Church, New York City.

# The AGASSIZ ASSOCIATION

## ARCADIA: Sound Beach, Conn.

### BOARD OF TRUSTEES.

Corporators: Edward F. Bigelow, Ph. D., Sound Beach, Conn., President and Treasurer; Hon. Homer S. Cummings, Stamford, Conn., Secretary; Walter D. Daskam, Stamford, Conn. Other Trustees: Harlan H. Ballard, Pittsfield, Mass., Honorary Vice-President; Hiram E. Deats, Flemington, New Jersey, Business Adviser and Auditor; President David Starr Jordan, Stanford University, California, Dean of Council; Dr. Leland O. Howard, Washington, D. C., Naturalist Adviser; Reverend Charles Morris Addison, Stamford, Conn.; George Sherrill, M. D., Stamford, Conn.

From the Charter of Incorporation: "The purposes for which said corporation is formed are the following, to-wit: the promotion of scientific education; the advancement of science; the collection in museums of natural and scientific specimens; the employment of observers and teachers in the different departments of science, and the general diffusion of knowledge."



With great regard
Yours very truly
L. Agassiz
Nahant, August 25, 1862.

### AGASSIZ AS A TEACHER

HE spoke with intense earnestness and all his words were filled with that deep religious feeling so characteristic of his mind. For to Agassiz each natural object was a thought of God, and trifling with God's truth as expressed in Nature was the basest of sacrilege.

. . . . . .

And the Summer went on, with its succession of joyous mornings, beautiful days, and calm nights, with every charm of sea and sky: the master with us all day long, ever ready to speak words of help and encouragement, ever ready to give us from his own stock of learning. The boundless enthusiasm which surrounded him like an atmosphere, and which sometimes gave the appearance of great achievement to the commonest things was never lacking. He was always an optimist, and his strength lay largely in his realization of the value of the present moment. He was a living illustration of the aphorism of Thoreau, that "there is no hope for you unless the bit of sod under your feet is the sweetest in this world—in any world." The thing he had in hand was the thing worth doing, and the men about him were the men worth helping.
*—David Starr Jordan in "Agassiz at Penikese."*

### STUDENT MEMBERSHIPS.

#### Chapter Organization Expense.

| | |
|---|---|
| Entrance Fee | $1.25 |
| Handbook, "Three Kingdoms" | .75 |
| Engraved Charter, mailed in tube | 1.00 |
| Total necessary expense to a Chapter upon joining the Association | 3.00 |

#### Annual Dues.

| | |
|---|---|
| The Annual Dues for Chapter | 2.00 |
| The Annual Dues each Member of Chapter | .05 |

#### Corresponding Member's Expense.

| | |
|---|---|
| Entrance Fee | $0.25 |
| Handbook, "Three Kingdoms" | .75 |
| Certificate of Membership | .50 |
| | $1.50 |
| Annual Dues | 1.50 |
| | $3.00 |

Student Members are required to make a report at least once a year. This report should contain not only a statement of work done, but of "the promotion," "the advancement," etc. See quotation from Charter. We are to help others as well as ourselves. Extend the influence of the AA.

**The Annual Dues include payment for subscription to The Guide to Nature.**

### COOPERATING MEMBERSHIPS

| | |
|---|---|
| Sustaining Member (annually) | $5 |
| Sustaining and Honorary (annually) | $25 |
| Life Member (paid at one time) | $100 |
| Patron (paid at one time) | $1,000 |
| Founder | $5,000 |
| Benefactor | $25,000 |

Cooperating members may, if they desire, be enrolled as members of The Educational Humane Society, which is a Chapter of the Agassiz Association. Its work is general and world-wide. It believes in the law of love, rather than the love of law.

**Big Science and Big Business.**

Big Money is made by Big Men in Big Business. When some of these Big Men stop to patronize Big Science, they make the mistake of supposing that science can be pursued as the factory is managed, or as a mine is exploited by the rules of Big Business. It should not be forgotten that science is more closely akin to poetry, to missionary work, to education, to religion, than to the rolling of steel, or the selling of oil. Good work may be done in science, wholly for the sake of money, but, as in religious matters, the best work is actuated, not for money, not for any personal reward, but by the devoted, self-sacrificing, faithful love of Mother Nature.

A few years ago Andrew Carnegie decided to cultivate Big Science on the principle of Big Business. He established the Carnegie Institution at Washington, and there was put at the head of that Institution President Woodward, who is generally regarded as good a man as could have been selected for the place. President Woodward has had an extensive experience in things educational, and he knows the requirements of technical science. That Institution has done great and good work. President Woodward has shown himself to be the right man for the place, but in the estimation of many people the results have been ridiculously disproportionate to the amount of wealth placed at the Institution's disposal, and this is through no fault of President Woodward or his staff, but is a necessary principle of the proposition.

"The Popular Science Monthly," in a recent editorial, in which the work of this great Carnegie Institution was criticised and commended, pointed out what every one knows, that the results in behalf of mankind in a knowledge and love of nature have not been commensurate with the expenditure of the millions placed at the disposal of the authorities. This is no reflection on the great philanthropist, nor on the Executive Board, certainly not on President Woodward. All have labored with best intentions. They have been faithful in their work; they have done many great and good things; this is undeniable, but "The Popular Science Monthly" is right when, in commending the work, it laments the fact, that although it possesses tremendous facilities, the Institution has not produced tremendous results. The editor writes as follows:

"The most desirable institutions for scientific work would probably be comparatively small laboratories conducted by the scientific men who work in them. . . . It would be well if such institutions were endowed by the rich, still better if they were supported by a state or a community."

This opinion has been expressed by many correspondents, and by prominent scientific men who have carefully watched the work of The Agassiz Association. A letter just arrived at our desk speaks thus:

"It looks to me as if the real scientific work, or the greater part of it, must in the future be done not for a living, but for love. Big sums of money seem not to procure the genuine article."

We are perfectly willing to have compared, after the fullest investigation, the great and astonishing results that have been accomplished by The Agassiz Association with small financial aid, with the results accomplished by the Carnegie Institution. The Carnegie Institution has a great field to itself—so have we, but when one has nearly thirty millions in about ten years, and the other not half that number of thousands in about forty years, we cannot refrain, in watching the onward course of finances, from stopping and weighing each in the balance, and saying to Big Men of Big Business, Science is largely a matter of heart as well as of head; it should be pursued by all together, on the principles of Big Business. Scattered throughout this land are hundreds of devoted, faithful workers that need a little help. I am personally familiar with several scientific men who, by a gift of even a few books or a small microscope, would be enabled to do as devoted, faithful work as is ever done by a salaried official, though he have from five to eight thousand dollars a year for doing it. There are only about 4,000 good scientific workers in the United States. Probably not over one-fourth of these are especially desirious of original research work or need help. Give 1,000 workers $1,000 each and that would be

only one million dollars ($1,000,000). The income of the Carnegie Institution last year was $1,510,876.74. That would leave over a half million for office expenses and special staff investigation. Suppose from our list of workers we could select 1,000 to be aided an average of $10 a year in books, etc. Does any one for a moment think that only $10,000 could be expended to so good advantage in any other manner?

There are many thousands of boys and girls, men and women, sincerely interested in the study of nature. Many of these have not much time nor money to develop their studies. It is the mission of the AA to give encouragement and guidance to these workers. Some will develop into most expert natural scientists. We have been doing that work for forty years. Many of the best scientists testify that their start was with The Agassiz Association. Some of the most efficient and learned scientific societies started as Chapters of the AA. Notably among these are The Wilson Ornithological Club, The Torrey Botanical Club, The Sullivant Moss Society, and others.

The AA does not need thirty million dollars. No other organization within itself can use that amount to proportionate advantage. The AA does need a few thousand to pay a few devoted workers, and to meet the actual expenses of the office.

## Our Luther Burbank Chapter.

[From a personal letter from Professor Ralph Benton, Department of Biology, University of Southern California, Los Angeles, California.]



MEMBERS OF THE LUTHER BURBANK CHAPTER AT ECHO ROCK, (5660 FT.), TOP OF MT. WILSON.

Mt. Wilson Astronomical Observatory is located here.

Just a line in reference to The Agassiz Association work. On May 28, Agassiz's birthday and "Charter Day" of the Luther Burbank Chapter, we closed the year's activities (academic year) with an evening gathering of the members at my home. About twenty were present, despite the stress of the closing work of the term. A resultful meeting was held. The committees reported a number of members for election, and an eventful series of field



IN THE OFFICE OF THE ZOOLOGICAL LABORATORY, UNIVERSITY OF SOUTHERN CALIFORNIA.

Professor Benton (seated), Mr. Elmer Higgins (in the center) and Mr. Alfred Cookman (at the right).

trips. These opened March 7th, Luther Burbank's birthday, at Verdugo Canyon, with eighteen present; Point Firmin (San Pedro on the coast) March 21st, with some fifty present; Big Santa Anita Canyon April 25th, with twenty-three present, and Verdugo Canyon (second trip) May 16th, with eleven present. It was too late in the year for a large attendance. Besides these, there were three more or less independent trips—that is, semi-Agassiz trips, since members of the AA were in the majority. One was up Mt. Wilson and return via Mt. Lowe. This was a three days' journey, and five were present. Another was up the Arroyo Seco, with fourteen present; and to Whittier Entomology and Plant Pathology Laboratory, and Puenta Canyon, eleven attending. Desirable things on the docket are a bulletin board for current items of biological and nature study interest, the framing of our Charter and engravure of Agassiz, a Chapter pennant of the AA colors, and an appropriate local pin.

The annual election of officers took place on the same evening. The new officers are: President, Miss Lena Kirkpatrick; Vice-President, Mr. Elmer Higgins; Secretary-Treasurer, Miss Jessie Mauzy; Business Manager, Mr. Alfred Cookman.

I may say unofficially that Miss Kirkpatrick is an exceptionally bright young woman with splendid executive ability. I feel safe in predicting that under her guidance we shall have a successful year. On her election she was the recipient of a large bouquet of golden coreopsis tied with a green bow, the Agassiz colors, and symbolical of the purposes of the Chapter—a fuller and deeper appreciation of nature as well as of the work of Luther Burbank.

I took the opportunity to speak of the ideals of Louis Agassiz and hence of the ideals of the AA, especially emphasizing three points—first, Agassiz's insistence on the study of things and of nature at work, his relation to the laboratory and to the nature study movements; secondly, his strong scientific sense in accepting generalizations only on the actual evidence at hand, his tentative attitude or suspended judgment, and his willingness to change on receipt of new evidence; also his indefatigable energy in collecting unbiased data; and thirdly his reverence for nature.

I might mention in this connection three other lectures given this term under the auspices of the AA and attended by an average of between eighty and one hundred students—two by myself on the life and work of Louis Agassiz, and one by Mr. Joseph Grinnell, Jr., on butterflies.



LUNCH HOUR OF THE LUTHER BURBANK CHAPTER IN THEIR CELEBRATION OF LUTHER BURBANK'S BIRTHDAY.



"IN THE ROCKY CANYONS WHERE THE TROUT FLASH."

I enclose several photographs that may interest you and that you are at liberty to use as you may desire. The one showing my assistants is splendid. It was taken as one of the students happened to come in, and is "just as we are."

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### In Which Part are You?

Every subscriber to this magazine at $1.00 a year, is receiving what costs about twice that amount. A part of the deficit is met by membership dues, a part by contributions, while a part still remains in unpaid bills against The Agassiz Association.

If you cannot afford more than a dollar, we shall be glad to continue your subscription at that price. This is the purpose of the membership fees and contributions.

If you can pay more we earnestly invite you to become one of those (members or contributors) that are helping, in a missionary spirit, to spread widely a knowledge and a love of nature. A large part of the cost of any magazine is in the making of the first copy. If we could add five hundred subscribers to our list, even at $1.00 each, they would not only aid financially, but would greatly enlarge the usefulness of the work. See list of contributors and new members on pages 86 and 87 of the July number.

### Our Influence in Texas.

Beeville, Texas.

To the Editor:

I so greatly enjoy THE GUIDE TO NATURE that I would not like to be without it. My queen bee mating yard of more than one thousand hives and nuclei is six miles from the town and "near to nature." Through the influence of THE GUIDE TO NATURE we have purposely arranged to have nature in her untrammelled beauty as conspicuous as possible. The birds are fed, the squirrels and other wild animal life are becoming accustomed to us and are recognizing us as their friends. An owl's nest is less than forty feet from our dining shed. At times we could see five young owls peering out of the same hole in the tree and apparently wondering what "manner of man" we are. A little later five came out and took their stand "all in a row" on a limb.

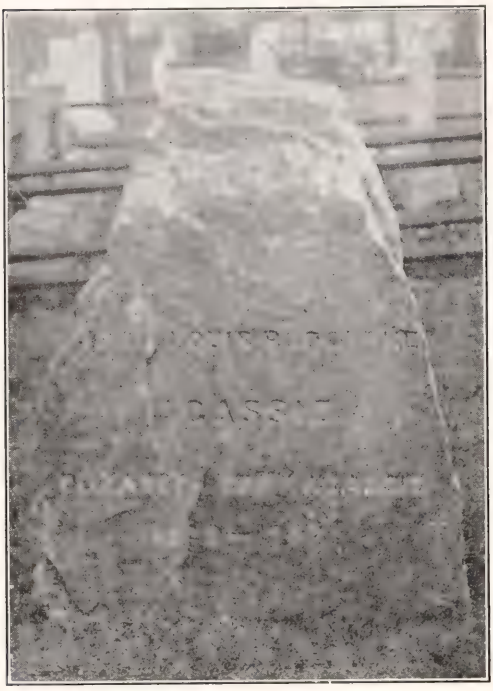
It is only the rattlers upon which we wage war. In this dense forest of tree and brush we have plenty of them. In this ten acre space, purchased expressly for a queen mating yard, while I live in peace with all other of God's creatures, I am waging war on the rattler. I came near stepping on one a few days ago, but his timely warning prevented.

Yours respectfully,

W. H. LAWS.

### Louis Agassiz's Monument in Mt. Auburn.

Those who study nature from a reverent standpoint and in all sincerity can find no greater inspiration than Louis Agassiz's enthusiasm. He has



FROM NATURE FOR A TEACHER OF NATURE.

been called "the past master of enthusiasm." In his earlier years he studied nature in spite of poverty, unfavorable conditions and, at times, discouraging surroundings. His monument in Mount Auburn Cemetery, Cambridge, Massachusetts, typifies his simplicity and his strength; it is a plain boulder, and its lettering is simple.

Elizabeth Cary Agassiz, whose name is likewise on the monument, edited "His Life and Correspondence," and for the stone she wrote these words:

"The boulder that makes his monument came from the glacier of the Aar, not far from the spot where his hut once stood; and the pine-trees which are fast growing up to shelter it were sent by loving hands from his old home in Switzerland. The land of his birth and the land of his adoption are united in his grave."

The photograph on page 134, of Louis Agassiz was sent to The Agassiz Association by his grandson, Mr. R. L. Agassiz; that of the monument by Mr. James C. Scorger, Superintendent of the Mount Auburn Cemetery. The Superintendent writes as follows:

"The monument is a boulder from a glacier of the Aar, which was sent here by earlier associates of Louis Agassiz. The inscription was written by Mr. Alexander Agassiz, and is as follows: On the front,

JEAN LOUIS RODOLPHE
AGASSIZ.

On the base ,at the rear,

Born at MOTIER, SWITZERLAND
May 28, 1807
died at
CAMBRIDGE, MASS.
DECEMBER 14, 1878.

And on the right-hand side of the monument,

Boulder from the Aar glacier."

---

### A Double Radish.

To the Editor:

I send you the photograph of a peculiar radish grown by Mr. Silas Walters, North Manchester, Indiana.

J. L. BLICKENSTAFF.

This remarkable growth is the first of the kind that has come to our desk. It seems strange that the radish could develop another and larger form, considerably below the surface.



THE DOUBLE RADISH.

### Learning by Seeing and Doing.

Our ancestors thought that learning was wholly a matter of books. Young people were told, "If you get books and diligently study them, you may acquire an education without the aid of a teacher." The example of Benjamin Franklin as he diligently poured over his book was held before us, or that of Lincoln in the log house as he studied his book by the aid of a flaming pine knot.

Then came an era that seemed to be a long step ahead. We were told that the teacher is the whole thing. For many years the slogan was that with "Mark Hopkins at one end of a log and a boy at the other" you have a university. The personality of the teacher was the climax, the acme, the keynote, the keystone and several other little things of the kind. It was his mission to teach and the pupils' duty and privilege to learn.

Educational progress then took another step ahead. A few years ago a new idea was announced. Education is obtained through one's personal experience by direct contact with things which suggest thought. It was decided that a teacher is after all not very important. The first school to popularize this notion was Louis Agassiz's school on the Island of Penikese. All over the country like wildfire spread his statement to the pupil who had come from far to ponder big books, and to sit at the feet of this Gamaliel of science. To the astonishment of that pupil Agassiz gave neither books nor himself. He gave the pupil a fish and told him to get to work. His laconic declaration, "Study the fish," has become classic. The educational principle that natural objects are worth more than books or teacher, is being inculcated by the present President of The Agassiz Association, Dr. Edward F. Bigelow of ARCADIA: Sound Beach, Connecticut, in continuation of the spirit that prompted Louis Agassiz. At the Manor School at Shippan Point he will cooperate with the boys in exemplifying the principle of learning by seeing and doing. He believes that the act of learning will be a joy if it be made a matter of self-suggested thought and activity on the part of the pupil. Beginning with the fall term he will cooperate with the pupils of the Manor School in building a cabin for seeing and doing. The curriculum will include more than mere manual training, though it will embrace much of that phase of a boy's joys and activities. There will be a zoological garden, a botanical experimental room in which to witness the progress and growth of plants and animals. Records of these will be made by aid of a camera. The life history of fish will be observed. Many things in nature will be used as a basis not merely for the delight of actually seeing but for intellectual training and the cultivation of skill in observation.

Parents are cordially invited to cooperate not only in making this experiment successful, but in sharing in the benefits of such success. We believe that not a parent in the country will question the benefit of mental training along the line of the pupil's own mental inclination. We get a knowledge of that in which we are most interested. Mind is not a tank to be filled by a pump, but a reservoir from which should flow joy and efficiency.

Boys especially like activities. Those active movements that tend not only to athleticism but to mental training have therefore the greater value. "The Activity Cabin" of the Manor School cannot fail to meet with hearty approval. Parents desiring further information are cordially invited to correspond with Mr. L. D . Marriott , Manor School, Shippan, Stamford, Connecticut, or with Dr. Edward F. Bigelow, The Agassiz Association, ARCADIA: Sound Beach, Connecticut.

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### Lectures by Dr. Bigelow.

I write this hasty note to tell you again of my hearty appreciation of the excellent series of lectures which you delivered before the Summer School. They were interesting, instructive and entertaining and met with a hearty approval on the part of those in attendance. Your work as a whole was entirely satisfactory and you left behind you many new friends. I trust that circumstances will be such that we can have you with us again next session.—Professor Charles G. Maphis, Director, University of Virginia Summer School, University, Virginia.

## Necrology:

**Jacob Langeloth, Riverside, Connecticut. Died August 14, 1914.**



A Life Member and liberal contributor of The Agassiz Association. First contributor to the fund for the Welcome Reception Room.

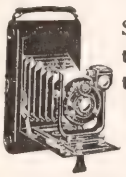
### Interest in Microscopy.

I sympathize most heartily with you in wishing to cultivate the old spirit of amateur microscopy. If the youngsters get interested in the microscope and the microscopic world they will never get away from it, and they will appreciate and encourage nature study in all its forms even if they themselves never go very far with it.—Professor Simon Henry Gage, Cornell University, Ithaca, New York.

### The Spirit of the Whole.

Professor Wiseman, get you out of doors. Let be your books and lock the laboratory behind you for a little while. Empty your brain of facts so that there may be room for a few new ones. Forget for an hour even the best and most firmly established of your theories so that you may not be tempted to interpret falsely what you see. Listen to the flicker laughing heartily in the distance. Watch the slim gray mockingbirds as they play hide-and-seek about the grove. Keep an eye on the amber-colored butterflies flitting carelessly from flower to flower. Ah, but there comes a kingbird and he crushes one of the butterflies in his bill. And you, Professor Wiseman, will now nod your head sagely and recognize an illustration of the deadly struggle for life. You will use the incident next day in your class as a practical demonstration of the bloody war of nature. See to it, then, that you do not lead those young men astray. Be careful that you do not give them a false idea of what you saw when you left your books and your dissecting table for an hour and, contrary to your custom, went out into the living world. When you tell them about the butterfly that met death, see to it that you tell them also about the hundred others that went on sipping honey in all delight of life, and about the flicker laughing in the distance and the happy mockingbirds flitting about the grove.—Herbert R. Sass, in the Atlantic.

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# LITERARY AND BIOGRAPHICAL

**Tree Guide.** By Julia Ellen Rogers. Garden City, New York: Doubleday, Page & Company.

It is not strange that the greatest member of the plant kingdom should inspire us with the greatest admiration. Trees far exceed us, not only in height, but in length of life. They bring gifts to supply our bodily needs and radiate a beauty that stimulates our soul. Everyone loves the shade of the forests and groves, but how few admire the trees with real intelligence! How many of us can call them by name as if they are old friends? It is an unthinkable human friendship in which each is ignorant of the other's name. Then let us put trees on at least a similar basis and learn their names.

Miss Rogers has given us a well arranged and useful little handbook. On it the publishers have exhibited their usual mechanical excellence.

---

**Where Rolls the Oregon.** By Dallas Lore Sharp. Boston: Houghton Mifflin Company. Price: $1.50 net.

The author is a literary naturalist, which means a genuine lover of all phases of nature with verbal skill to depict that love. He says that he did not go to the Northwest to write a book; but, wherever he goes, he carries with him his love for nature and his desire to tell others of the things that charm him. In visiting Finley and Bohlman, the well-known ornithological workers of Oregon, he naturally found much of interest. The volume conveys ineffaceable impressions of the vast outdoors of Oregon. It is good reading. If preference were to be expressed as to what has most closely held the reviewer's attention, mention might be made of "The Butterflies of Mount Hood" and "The Wild Mother."

---

**How to Make a Country Place.** An Account of the Successes and the Mistakes of an Amateur in Thirty-five years of Farming, Building, and Development: Together with a Practical Plan for Securing a Home and An Independent Income, Starting with Small Capital. By Joseph Dillaway Sawyer. New York: Orange Judd Company.

This is a full book. The index lists about 4,525 topics and 1,025 illustrations. These are divided into ten chapters which seem to the reviewer to cover everything in home building and one might also say everything pertaining to the subject. Mr. Sawyer has condensed his work with remarkable, painstaking completeness. He has told the whole story. In such an immense amount of material it baffles the reviewer to know where to begin or where to end. Sufficient it is to say that this material is so thoroughly indexed that one can readily find in text or illustration the treatment of any phase of the subject. Mr. Sawyer's extended experience, somewhat unique in many respects, makes him an authority. He is well known to his friends as a man who gives careful attention to every detail and this book is the outcome of enthusiastic love of his life occupation. Many of the illustrations are from Sound Beach and vicinity and this makes the book peculiarly appealing to the residents of this part of the Connecticut coast, and yet, one in the remote wilds of Africa would enjoy the book that says so much so interestingly. The publishers have done justice to the encyclopedic amount of material by giving it all good arrangement and substantial mechanical appearance.

---

**A History of Connecticut.** Its people and institutions. By George L. Clark. New York: G. P. Putnam's Sons.

CONNECTICUT.

'Tis a rough land of earth and stone and tree,
Where breathes no castled lord or cabined slave;
Where thoughts and tongues and hands are bold and free,
And friends will find a welcome, foes a grave;
And where none kneel, when to Heaven they pray,
Nor even then, unless in their own way.

Fitz-Greene Halleck.

That he is a resident of Connecticut does not explain the reviewer's interest in this book. Our state has passed through a series of remarkable vicissitudes. Its people have cherished many peculiar sentiments; all these have been so well described by the author that the book makes admirable reading for any one whether or not he lives in Connecticut or is proud of Connecticut. The word readable is the keynote to which the book responds. It is not a collection of dusty dates and dry statistics; it is full of human interest. The author describes the amusements, the hardships, the theology, the leather breeches, the home-spun coats, the evolution of the log-house into the lean-to and the gambrel-roof; he tells how the schooner has changed to the steamboat, the ferry to a bridge; how the people managed Indians, wolves, rattlesnakes, witchcraft, slavery, tramps and Sunday; how "they erected schools, meeting-houses, whipping-posts and pillories in every town; how they relieved the monotony of brewing beer, working the loom and hoeing corn by a journey to Tower Hill to enjoy the luxury of a moving picture of a public hanging."

Even the native cannot appreciate his wonderful little nutmeg state until he reads Mr. Clark's book.

## A Remarkable War Announcement.

See page XVIII (facing third cover page).



# The Guide to Nature

OCTOBER, 1914



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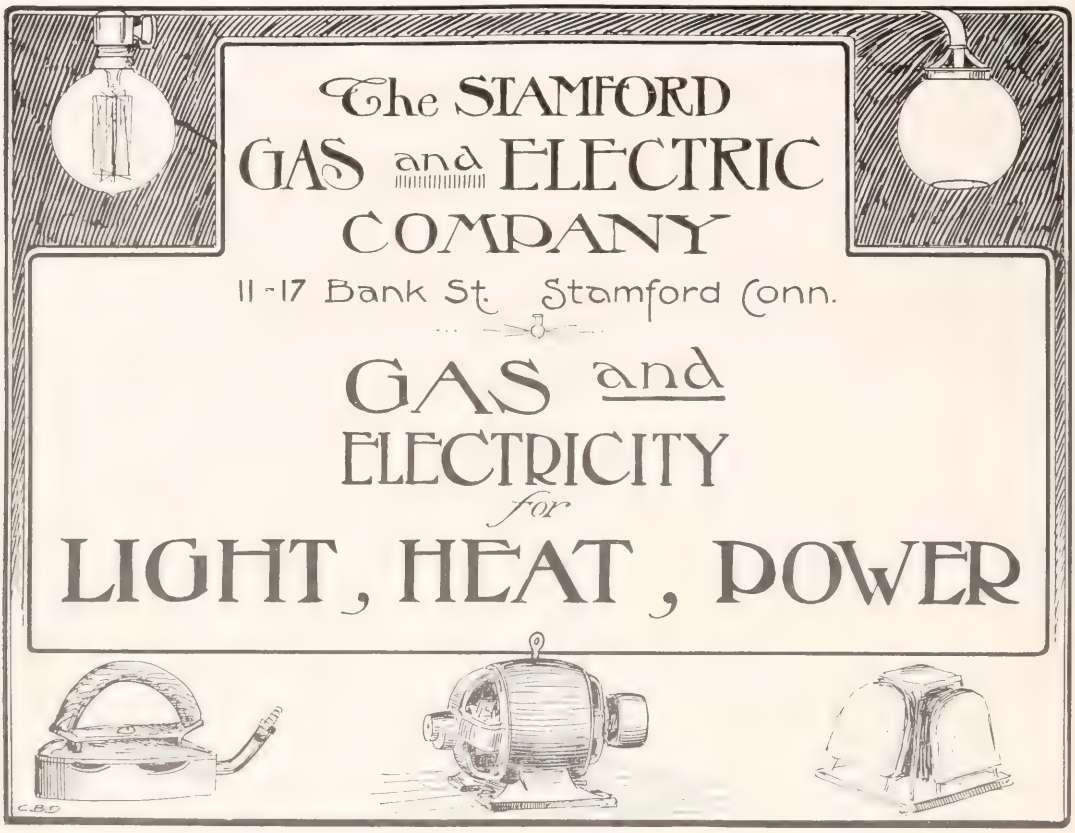
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Under its present plan THE GUIDE TO NATURE has been extensively localized, and now has so extended and active a circulation in the towns of Stamford and Greenwich, Connecticut, that it is recognized by the best business houses as a good advertising medium. Those general naturalists that deplore this increasing local interest can change it, if such is desirable, by increasing the general interest and the general circulation. We started by producing a general natural history magazine, and because it proved to be a losing venture, it was necessary to make it what it now is. Two years ago the report published in this magazine showed that THE GUIDE TO NATURE had cost $1,192.22 more than it had received. Our April 1, 1913, statement shows that THE GUIDE TO NATURE has received $568.06 more than it has paid out. And yet, nothwithstanding the change in the financial situation that has been accomplished largely by the local features, there are still some of our general natural history friends that criticise the editor's policy unfavorably? We are now a strong local magazine for southern Fairfield County, because we find in this special field a large number of people who are interested in suburban or country life, or in general outdoor work, and pretty generally in many natural history pursuits. We would gladly also further develop the magazine along general lines, if we could have similar general co-operation and extended circulation.





### The Linden as a Shade Tree.

It is interesting to notice the rapid favor which the linden is gaining as a shade tree, and why. About sixty years ago, several maple, elm, and linden trees were set on and near what are now the grounds of Charles H. Lounsbury, on Bedford Street, adjoining the library building. The elms are all gone, and what maples are left are in a somewhat ragged condition. But notice the two or three lindens standing sixty to seventy feet high, in perfect health, and with their tens of thousands of blossoms.

Another fine specimen may be seen directly opposite the front door of St. Andrew's rectory. Several more on Noroton Hill, and at Linden Lodge. One of the finest specimens is on the grounds of Mr. H. Hofer, on the corner of East Main Street and Lockwood Avenue.

The linden is a rapidly growing tree, is seldom troubled by any pest, and when grown in the open, is perfect in form. Unlike the maple, one almost never sees a dead or broken limb. They will stand the wind better even than the elm. These are some of the reasons for the linden's growing popularity.—The Stamford Advocate.

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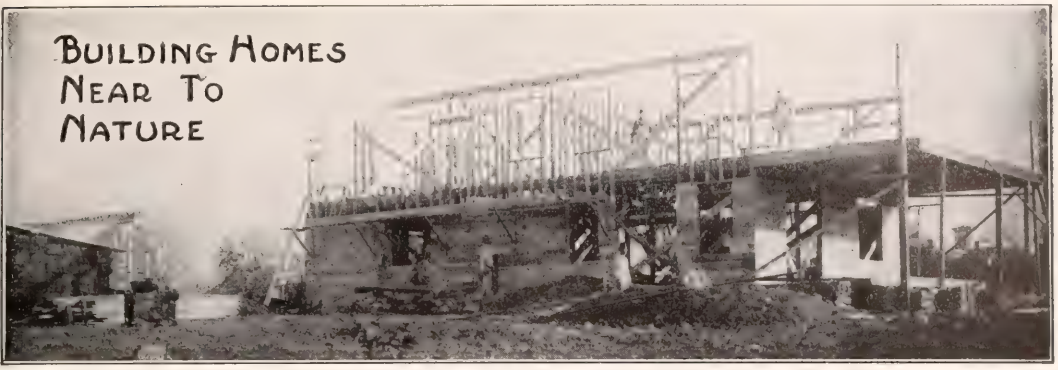
### Breaking It Gently.

The evening callers were chatting gayly with the Kinterbys when a patter of little feet was heard from the head of the stairs. Mrs. Kinterby raised her hand, warning the others to silence.

"Hush!" she said softly. "The children are going to deliver their 'good-night' message. It always gives me a feeling of reverence to hear them—they are so much nearer the Creator than we are, and they speak the love that is in their little hearts never so fully as when the dark has come. Listen!"

There was a moment of tense silence. Then——

"Mamma," came the message in a shrill whisper, "Willy found a bed-bug!"—The Pathfinder.




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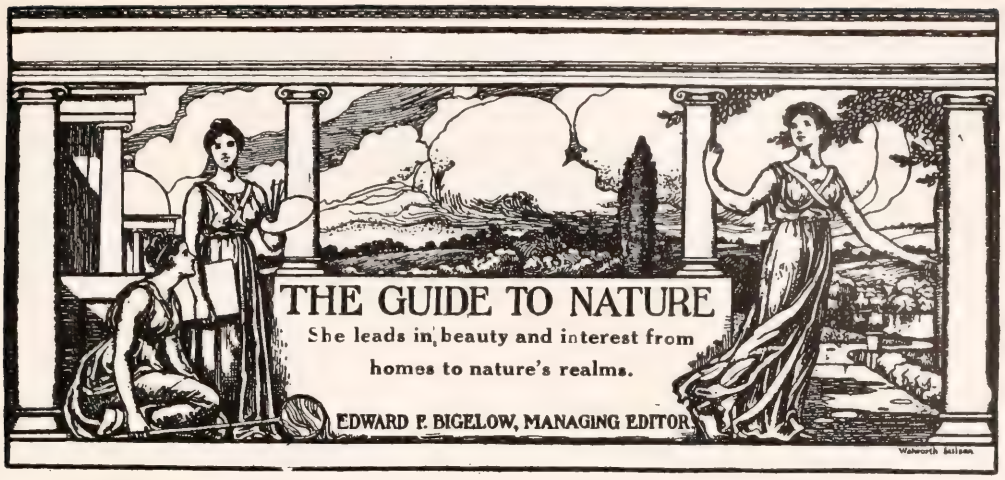




"Children," said the teacher, instructing the class in composition, "you should not attempt any flights of fancy; simply be yourselves and write what is in you. Do not imitate any other person's writings nor draw inspiration from outside sources."

As a result of this advice one bright lad turned in the following: "We should not attempt any flights, but write what is in us. In me there is my stommick, lungs, hart, liver, two apples, one piece of pie, one stick of lemon candy and my dinner."

"Come out West, old boy, and visit me on my farm," wrote the enthusiastic Kansas Man; "breathe the fresh air, eat young onions, and get close to nature's heart." "That sounds alluring," wrote the jaded Easterner, "but do you think nature would let me get close to her after eating young onions?"—Chicago Tribune.




Published monthly by The Agassiz Association, ArcAdiA: Sound Beach, Connecticut

Subscription, $1.00 a year  Single copy, 10 cents

Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII  **OCTOBER.**  Number 5

# He is Successful in Raising Vegetables.

**BY EDWARD F. BIGELOW, ArcAdiA: Sound Beach, Conn.**

"GOOD morning, Mr. Thurton. I am the editor of THE GUIDE TO NATURE. I hear that you are more successful than any other man in this part of Connecticut in raising vegetables for the city market. In that connection, at this, our first meeting, I want to ask you a question without telling you why I ask it."

"If it is not too difficult," Mr. Thurton said, "I will try to answer it."

"It is one on the answer to which depends, in my opinion, much of the reason for success or failure. It is: Why are you raising vegetables for the Stamford market?"

Mr. Thurton laughed as he said, "That is the easiest question in all the world for me to answer. Simply because I like the raising of vegetables better than any other occupation."

"But, you do not mean to say you would continue to cultivate vegetables and live on this market-garden farm, if it were not financially profitable? In a recent discussion regarding the causes of success or non-success in Connecticut farming, I made this statement, which, as a whole, I believe to be true, although there may be, as with every other general statement, exceptions due to circumstances that in reality prove the general truth. I have contended that primarily pecuniary profit never kept a man on the farm, nor its absence drove him away. And I have further claimed that we are influenced more by our likes and dislikes than by the love of money.

"I have made inquiries as to who is the most successful farmer in Stamford or its vicinity. I have consulted those who place success upon financial profit, and have inquired of those who place success upon the doing of things in the right way. I find in Stamford and its vicinity that the general consensus, from both points of view, is that you are the most successful farmer in Fairfield County. I do not mean successful in expending great sums of money in fancy farming largely for pleasure, but I mean as a serious occupation in which one can give vent to his affection for Mother Nature, his liking for the products of the soil, his wish to do good to the community, as well as to earn a living for himself and his family.

"Perhaps you do not know in what

Copyright 1914 by The Agassiz Association, ArcAdiA: Sound Beach, Conn.



MR. THURTON (AT THE LEFT) TO MR. BARTLETT: "THAT'S THE RESULT OF CANADA WOOD ASHES."

enviable esteem you are held by your fellow townsmen, but they seem to think that you feel as if you have a mission in life, and that you are laboring solely to make that mission successful. They tell me that you work hard. If you should put the same amount of effort and the same amount of time in some other business, do you not think that you could make that business more successful than your farming?"

He laughed heartily and said, "That is just what I have done. I have been more successful in a strictly financial way by conducting a city store, than I have been in managing a market garden. For fourteen years I had a grocery business at Mt. Vernon, New York with my brother as a partner. We did a business of $150,000 a year, and we made money, but all the time I felt that the grocery business is not my life's work. I wanted to be a market gardener because I longed for country life, and wanted to settle down in the country, enjoy fresh air and have the fun of raising the best vegetables possible."

"What you say gives me great satisfaction, because it coincides with my opinion. I tell people everywhere, chiefly in instructions to teachers in the West for their vocational work in agriculture, and also in my addresses before granges in Connecticut, that to make farming successful one must first of all like farming better than any other occupation, and because of that

liking his success will be greater than would be possible in any other business. I have contended that farmers make many and varied excuses for moving to the city: They cannot make money, or they have imperfect social and educational facilities, all of which to my mind are only pretexts. As Caesar said of old, 'Men easily believe that which they wish.' When a man does not deep in his heart like nature nor like to deal with her products at first hand, it is easy for him to imagine any number of reasons why city life is perferable. If money were my prime object, I should certainly not be a naturalist. But I cannot escape even if I would, and no attractions and no amount of money obtainable from other work would make me feel that life is worth living, or that I should in any other way be fulfilling my mission on earth."

This seemed to please Mr. Thurton, for again he laughed heartily as he said, "I feel in exactly that way. My grocery business would bring more money than market gardening, but it would not bring the wholesome supply of fresh vegetables, the dealing with Mother Nature at first hand, nor the fresh air. What you state about educational and social privileges are only secondary matters. My daughters have had the advantages of the Stamford High School, and it is not a difficult matter for me to transport them



HE LOVES THE WORK, AND THEREFORE WORKS.



IN THE HAYFIELD.
Mr. Thurton by the horses.



A CORNER OF ACRES OF SQUASHES.

to and from the farm, nor is it difficult for any other farmer. Time never hangs heavy on my hands. I am busy every day from morning till night, and yet I have time with my family for recreation and social intercourse, yes, even to go fishing frequently in Long Island Sound. I would not leave this farm work or gardening, if you prefer to call it gardening, for any other occupation, even if it promised twice the profit."

"Good for you, Mr. Thurton! You are evidently 'one of us' in that you love nature for her own sake and not for the money that she may give you. We all must have a reasonable amount of money, because those who supply our families with the necessities of life, are remarkably punctual in rendering bills, and do it with surprising regularity and frequency, but the greatest enjoyment in life, as I maintain, is in doing one's work, and if the work does not please me, if I do it reluctantly and through necessity, then is my life not worth living. My theory and practice too is that one does the best work when he is doing that which he likes best to do, and that his fellow beings have a right to demand his best work. No man lives unto himself and no man dies unto himself. Both his living and his dying affect others. But I did not intend to preach you a naturalist's sermon. I came to learn whether or not there is sufficient merit in your work to exploit it as an inspiring example to the readers of THE GUIDE TO NATURE. You have stood the test, and as I look over your fields I note that you are doing your work well. I should like to walk around your farm, if you are willing."

"I shall be happy to show you," he said. He led me through the lane, on both sides of which are fields made attractive by all sorts of vegetables. At the end of that lane, my eyes gloated over five acres of tomatoes!

"Here I am at home," he said. "If there is anything in the world that I like to cultivate, it is tomatoes. I can enjoy myself in this patch."

"I should think you might," I said. "The fruit too seems to be on friendly terms with you."

"Yes, sir," he said, "I feel on friendly terms with them."

"How many men help you in this work?"

"I have regularly from fifteen to twenty, but at times we must have many more and many younger to weed, to thin out the smaller vegetables and to pick peas and beans."

"How large is your garden?"

"I have this year about one hun-

dred and fifty acres under cultivation."

"Give me an idea of the extent of some of your crops."

"As an example," he said, "I have a field with thirty thousand cabbage heads."

"Enough," I replied, "to supply nearly every one in Stamford with a cabbage head. But what is in that large field where the small plants are just coming up?"

"That," he replied, "is spinach. We expect to turn out about a thousand barrels in the spring and probably as much more in the fall. The market in Stamford is pretty good for spinach, nearly up to Christmas, and we can have it then with a fall open until cold weather. But this year we have not much to boast of in the way of lettuce. It has been a rather hard season, especially at the latter part. However, I think we have as good as you will find anywhere. Here is a half acre that is fairly well headed, and the quality of the leaves is as good as one could expect.

"But speaking about the spring crops, reminds me that the one thing of which we do not seem able to get enough is asparagus, although we cut that by the ton and the ton. Stamford people like to buy it by the pound rather than by the bunch, as is the custom in some places. There could not be a better city market than Stamford for asparagus. These acres show what we are doing."

In another field I exclaimed at the expanse of summer squashes, when he said with enthusiasm, "Yes, there are times when you can raise them easily and there are times when you cannot. The queer thing about it is that the market seems to want them the least when you can raise them the best. The explanation, I suppose, is that almost every one has a liberal supply in his home garden, and the oversupply more than meets the demand.

"This year is an off one," he said, pointing to strange looking clusters of plants, "for the eggplant. That seems to require rather warm weather and plenty of water. But isn't the eggplant the most beautiful vegetable you have ever seen?"

"Yes," I replied, "they are so beautiful that they appear unnatural. They seem to have been painted by an artist and with a dainty brush varnished in their beautiful tints. They are as good to eat, too, as they are beautiful to



MR. THURTON (SECOND FROM THE RIGHT) GIVES PERSONAL ATTENTION TO THE BUSHELS OF STRING BEANS.



A "CORNER" REALLY AND SEEMINGLY OF ALL THE CUCUMBERS IN THE STATE.

look at; when you once acquire the taste you cannot get enough."

"I have a theory," said Mr. Thurton, "that the taste is growing much as it had to do with tomatoes. In these days a hundred crates of tomatoes every time we go to market will not satisfy the demand. I would carry more to-day if I had the boxes. But I am going to take rather more than a hundred, and shall get all the empty boxes that I can find at the various markets. When it is tomato time it is tomato time, and the demand is so great that it is apt to block other things.

"But," said he, pointing to a luxuriant clump of eggplants, "in a good season they yield fairly well, and we need never fear that we shall not sell all that can be produced."

Later while I was at the packing house I noted that twice the telephone said, "Give us more of those eggplants if you possibly can," and back to the field went the men until they had gathered every available one. I suggested that he should paint some of the yellow young squashes, and juggle them off on the market.

"I could not by any possibility get a half barrel more of those eggplants, but I should be glad to take an order for two carloads of summer squashes and deliver them to-morrow."

To gather two carloads from that field would have been a simple matter. When we come to sweet corn I will not attempt to tell how many acres nor how many ears because the figures would be so astounding that they would be beyond comprehension and have no meaning.

"I never dreamed," I said, "that one market gardener in the suburbs of Stamford raised things on a scale so enormous. But please tell me, approximately, what is the value of an average load of vegetables such as you send out."

"It is impossible to answer that question. When I take cabbages the value is nowhere near so great as it would be with celery or eggplants."

"Admitted, but then you can get near enough to it to strike an average."

"I guess from fifty to sixty dollars a load would be a fair estimate."

"And how many loads every market day?"

"From three to four," he said

"And how many market days?"

"Three—Mondays, Wednesdays and Fridays."

"It requires but little mental arithmetic to show that you deliver from one hundred and fifty to two hundred dollars' worth every time, and that the three trips together average about five hundred dollars a week, and yet there are people who say that the local market does not amount to much. But," I asked, "are you always sure that you

will sell all your load? It must be discouraging to bring back two or three loads, when you find the market is already supplied."

"Thirteen years ago I began to prevent that by clearing the course of such snags. I recall, as if it had happened yesterday, that I went to Stamford, called at the various markets and said, 'I am going to take orders to supply first-class vegetables.' The reply in nearly every instance was, 'Bring along your vegetables and we will look them over and perhaps buy some.' My reply was, 'I am not doing business in that way. The vegetables not sold will not be kept over nor thrown away; they will stay in the ground. If you want a half dozen heads of lettuce on next market day you may have them. You also may have a carload of vegetables if you want it, but you cannot get the half dozen nor the carload without a definite order in advance.' That seemed to be a new idea for Stamford, but I have always considered it the only proper basis for successful market gardening. I check up every load and I have a bill for every customer. He knows what he is going to get and I know what I am going to get."

"It looks to me," I said, "as if you had a good deal more in this business than a mere liking for it. The liking for market gardening seems to have been born in you, but you must have acquired the necessary mental training in running that grocery business in Mt. Vernon. I have known (and here I could not refrain from reverting to my theorizing) I have known some naturalists who love nature so well they lie all day asleep under a tree, but they never get much out of nature nor do they confer much benefit upon their fellow beings. One must apply system and hard work to make anything worth while. In dealing with nature there must be varied, careful system because of her widely varied products and interests. You seem to have successfully combined an enthusiastic heart with a sound systematic body and you devote the partnership in the managing of this farm. You have done a good deal out of the ordinary, and I am going to photograph you, whether you give me permission or not. I am a better judge of that than you are. I intend to photograph you and some of your work, not to advertise your market gardening, but to induce others to emulate your example in some other department of life. I believe that I can show some of our general naturalists that there must be more than love of the work. I do not believe that lack of knowledge is the reason why so many farmers move to the city. You will note that the combination is Heart and Head. The Heart or affection must come first. This finds a fitting partner in Head. When you were weighing sugar in Mt. Vernon or delivering a cake of soap, there must have been



HE CHECKS EVERY ITEM OF EVERY ORDER.



GOING FORTH TO STAMFORD TO FEED THE HUNGRY.
Mr. Thurton on the first wagon.

some points regarding the raising of asparagus and squashes, or even cabbage heads, that you did not know at that time."

This seemed to appeal to Mr. Thurton's sense of humor, for he laughed heartily. "A man has to learn," he said, "by dear experience; I am no exception. I found that, much as I like to raise vegetables, I had to learn how to raise them, and then I had to work to put my knowledge into practice."

* * * * * * *

The moral is evident—find your place in life, do the thing you best like to do, work with all the energy you possess whether you make money or not. I believe that Mr. Thurton is at heart really a naturalist and that some people who are called naturalists are not naturalists. A man who collects insects is not necessarily a naturalist any more than one who collects postage stamps is a postmaster. Collecting may be a fad but so loving and understanding nature as to induce her to yield her products and to reveal some of her methods, entitles one to the term, naturalist. The first thought of many that read this article, especially of those that know Mr. Thurton, will be "Ho, ho! so THE GUIDE TO NATURE has a 'write-up' of a market gardener this month." Yes, it has that, but it has more. The public sees only the surface of things, but the writer of this article sees a love for plant life and all its phenomena, a love for fresh air and open fields, a love for the sunshine, even for stone walls, cows and horses, that induced this market gardener to leave the city to go into the open. You may call him a market gardener, but I call him a nature student, nature lover and nature worker. He has the true principles of the AA.

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**The Passing of the Troubadours.**

BY ANNE P. L. FIELD, SOUND BEACH, CONNECTICUT.

Gray shadows veil the autumn sky,
And gray mist hides the dreary sea,
Summer has vanished with a sigh,
And winter's reign is yet to be;
There are no tunes in any tree,
For flocks are flying south by scores,
And I watch long and wistfully
The passing of the troubadours!

And as that cloud of wings sweeps by
To its appointed destiny,
I ask of sad October "Why
Could you not borrow June's decree
And keep the song-birds here for me?"
But all my pleading she ignores
To follow that swift mystery—
The passing of the troubadours!

"An empty nest!" the children cry
With ripples of exultant glee,
While I my desolation try
To smother in a gayety
I cannot feel, for Arcady
Is gone, and grieving earth deplores
In requiems of minor key,
The passing of the troubadours!

Envoy

Sweet minstrels! Would that I were free
To seek those balmy southern shores,
Where I forevermore might flee
The **passing** of the troubadours!

### They "Turn the Tables."

There was a time in Rome's luxurious days when men went mad over tables made of curly maple. Not of the sycamore maple, the standard hardwood of Europe to-day, but of the lesser maple, *Acer campestris,* the maple of the field. It outranked even the precious Arrah, or citron-wood, in popularity among the Imperial "smart set." The best trees grew on the nether slopes of the Alps; and the curly wood came from trees disfigured with knobs and swellings. There were two kinds: one, dark, which came in logs large enough to saw into tables; the other, white, far more beautiful, but always in such small-sized pieces that only curious and dainty articles could be made of it. Often it was worked down so thin that when polished it was transparent, and showed its beautiful patterns as if they were in a pane of glass.

"The Pavonaceous maple" was that rare grain whose elegant curls and undulations imitated the eyes of a peacock's tail. Workers in maple wood ranked with jewelers and goldsmiths. They made tables with the most beautiful colors and patterns revealed by their polished tops. For such a table Cicero paid ten thousand sesterces. It showed curious "spots and maculations" in the natural grain which imitated the colors and shapes of tigers and panthers! One of the Ptolemies had a circular table three inches thick and four feet and a half in diameter for which he gave its weight in gold! Fifteen hundred thousands sesterces—$60,000—paid by this emperor for a single table, probably represents the limit to which this extravagance was carried.

A common phrase, which we use without understanding its meaning, originated at this time. The women matched their husbands in lavish expenditures. "When the men at any time reproached their wives for their wanton extravagance in pearl and other rich trifles, they were wont to retort, and *turn the tables* upon their husbands." Evelyn, from whom I quote, makes this statement on the authority of Pliny.—Julia Ellen Rogers, in "The Tree Book."

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I certainly enjoy every minute I am reading the magazine. Its work is vital and may it win its deserved success.—Warren E. Pollard, Ames, Iowa.



BIRD'S-EYE MAPLE.
From a large specimen donated to ARCADIA by the Grand Rapids (Michigan) Veneer Company.



"AUTUMN IS LIKE AN OLD MAN RECALLING THE DAYS OF HIS YOUTH."

**Autumn's Silver Lining.**

Spring, with her opalescent skies, her flowers and hosts of other things which breathe innocence and joy, is assuredly the childhood of the year. But it does not follow that autumn is the melancholy analogue of old age which we sometimes fancy that it is. Is it not rather a renewed childhood? Again blue skies, flowers, birds, even butterflies and bees, as in spring. While these live out the summer their gaiety and freedom from care abandon them at about the time of the summer equinox; the birds have then built, the butterflies and the bees are taking thought for the morrow; the flowers are maturing their seeds; even the skies grow languid and the clouds pensive.

With the approach of age somewhat of childhood returns to the year. The bees hum cheerily; butterflies play among the asters and the goldenrod; birds recall their earlier songs; the meadowlark cries "spreent" from a lone tree in the pasture, and takes wing; the vesper sparrow, growing fond again, twitters his love notes and follows his mate over grass that is momentarily becoming browner; the phoebe too, grown musical again, or as nearly musical as she ever is, haunts your clothesline and flutters under the eaves. I have actually seen bluebirds building a nest in the autumn. The woods are again enlivened by warblers; the dead leaves rustle where thrushes hop and flit; that, too, is spring-like.

Autumn is like an old man recalling the days of his youth. Nor is there lacking a child to sit on his knee while he recounts with these vivid illustrations the varied tale of what has been; the tiny winter wren is already here, flitting, peering, questioning.

Think of the pine grosbeaks, redpolls, siskins, snow buntings and others soon to take the place of the departing birds. "Remember too 'tis always (summer) somewhere, and, above the awakening continents, from shore to shore, somewhere the birds are singing evermore." May there not be a beautiful symbolism in this annual migratory movement? Consider what fair scenes, what glorious skies and what an abundant harvest of their favorite foods these birds must leave—called by a voice that must be obeyed. Even on stormy nights one may hear the voices of little warblers as they pass, and in clear weather he may sometimes see them as they cross the disc of the moon. They are obeying a blind impulse, not knowing where nor why they go, quitting a land smiling and bountiful to travel through a thousand miles of darkness to a foreign

and what may not prove a happier clime.

It may not be easy, may not seem natural, to take an altogether cheerful view of the drooping flower, withering leaf and those other autumnal features that may appear symbolic of the transitory nature of all things earthly. But if faith and optimism are natural in the spring, why should we not, looking forward to another spring, find a faith firm in direct proportion to what may otherwise seem to be a good reason for doubt? We are too apt to cling to these sad appearances as the dead oak leaf clings to the twig until the new bud literally forces it to let go. Why not think of the glorious awakening which waits for spring's first whisper? Then the cold, the gloom, the rattle of bare boughs, shall not drown a "deeper voice across the storm." How hopelessly dead! how far beyond the power of winter's fury to further blight seem already the delicate violets and hepaticas and all their tribe! Dead to the raging storm; yet how lightly sleeping if spring should call, though ever so gently.

Soon a world of tumultuous rejoicing will awaken underground, and the news shall have long ceased to be news to every growing and creeping thing before our dull ear shall catch the first syllable of what is going on; not a morning but shall witness a resurrection; not a bud nor a breeze but shall tell the selfsame story of life reorient from death. EDMUND J. SAWYER.

### A Dainty Reminder of Nature.

The illustration shows typewritten lines decorated by strawberry leaves. In the black and white print these illustrations fail to do justice to the beauty of the originals, that were of the daintiest autumn tints. They are the work of Mrs. Fannie E. Blakely, the botanist of ARCADIA, who made these Christmas souvenirs for some of her immediate friends. She says that during this last autumn the coloring of the strawberry leaves was unusually attractive and brilliant. She does similarly decorative work with various other tinted leaves. Sometimes,

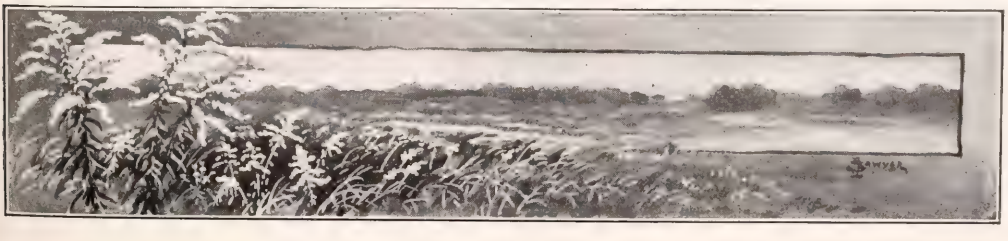


AUTUMN CHRISTMAS GIFTS.

even in midwinter, such leaves may be found in sheltered places. This is a good suggestion for appropriate souvenirs from the realm of nature that a naturalist may give to his friends.

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Beauty is really given only to those who open their minds and hearts by education to perceive and receive it.—Hamilton Wright Mabie.



# ORNITHOLOGY

## Saving Millions.

BY FREDERICK HAASE, KENILWORTH, ILLINOIS.

The Searchlight of Truth Thrown on the "High-Cost-of-Living" problem Reveals Amazing Extravagance on the Part of Those Who Are the Backbone of This Nation.

Every year the farmers and fruit growers of this country spend MILLIONS MORE OF YOUR money than they ought to! They allow countless species of harmful insects to levy a tremendous tax on them, annually, that comes right out your own pocket.

The destruction of wild birds by loss of their forest homes and by gun-practice has destroyed the primal balance between bird life and insect life. There are not enough birds left to eat the surplus of insect pests. So, the insects are wrecking havoc with John Farmer's grain crops, and Frank Orchard's fruit trees, and Uncle Samuel's all too limited forest tracts. Therein will you find cause for the unnecessary expenditure of MILLIONS OF DOLLARS.

Since the great forests that once covered our prairies and valleys have been ruthlessly destroyed and never replaced, the feathered tribe has lost its natural abode and has vastly decreased in numbers. Nature always intended to maintain a perfect balance among all things, but her plan was established long before cross-cut saws were manufactured, and longer still before man invented firearms. Nearly ninety per cent. of our normal bird life has already disappeared.

"Sunshine does not come from the sun, alone! It is to be found in anything and everything—anywhere and everywhere! There is plenty of sunshine and profit in the song of the wild birds."

What long-haired poet called the flying squadrons "sunshine?" Or, was it one of the dead and gone nature lovers? Neither! It is "Charley" White, in the prosaic city of Chicago, who spends his spare time in preaching this prose-poetry. You would never suspect it, to see him in the Board of Trade on a busy day. More likely you



A THREE STORY RESTAURANT.

This grain feeding device has three trays, placed one above the other and protected by waterproof top. Each tray is about one and one-half inches in depth. It's mighty pretty music—the "crack," "crack," "crack" of the birds when they break open the sunflower seeds.

would expect to find him interested solely in material money grabbing, and quite indifferent to the charm of glossy feather and rippling woodland song.

After all, though, he is an idealist with a broad, practical point of view.



AN OPEN-AIR "CAFETERIA."

Plain, everyday beef suet is a tempting morsel for the insect eating species. This basket is patronized liberally. The downy woodpecker practically hangs around the livelong day.

Certainly, he is farsighted to study the very thing which exerts a powerful influence over his business. Scientific trading in "The Pit" is really shorn of all speculation. Proper buying and selling must be based on every known fact obtainable. When a prominent operator enters the market, he does so, fully fortified with "last minute" reports from field agents. Of course, there is one element of risk that cannot be eliminated. It comes with a sudden awakening of the unshakeable grip which the insect pests have secured after months of UNSEEN propagation. Then, it is too late. Drastic measures may be taken by farmer and government together. Perhaps, these will prevent further inroads, but that which is gone is gone forever. Trace the flurries in the grain and produce markets, and you will invariably find the ravages of the deadly insect pest at their beginning.

Mr. Bert Ball, Secretary of the Crop Improvement Committee of the Council of Grain Exchanges, in touching on the most unique of agricultural campaigns under his direction writes. "He



WORKING IN COMBINATION.

A little above the suet basket hangs a wren bungalow. Although several openings appear to be shown, only one is put in the "bungalow." The others are "blinds."

who makes two blades of grass to grow where one grew before, in fact, produces two pounds of freight to ship, two checks to deposit, two bolts of goods to buy, two plows to sell, and more important than all, two dollars for the jeans which before had barely one.

"There is a million dollars annually lying under foot in every county which nobody collects for the want of a little public spirit and community of effort.

"The farmer must not be treated in a class apart. Conditions cannot be im-



LOOMING UP IN THE REAR OF THE HOUSE.
Stands the martin house, a wren bungalow and a bluebird box. The last two are homemade, while the first is a plain colony house on which many alterations have been made.

proved by criticising him or arousing his prejudices. The farmer is no more inefficient than the business man and naturally resents being singled out to be told of his shortcomings. The successful farmer is a business man.

"The business world must provide that the land be handled on business principles. The time will come when it will be a crime in law, as it is in fact, to plunder the soil. The community has a right to compel a man to return to his land whatever fertility he removes and to add a liberal percentage for posterity.

"Nor is it necessary to pass stringent laws. The very best law, which will enforce itself, is the law of economics whereby the farmer is given the profit which comes from his effort."

"Nature is woefully shy on bird shelters and bird fodder," says Mr. White. "We must all turn in and help, if we are to save MILLIONS OF DOLLARS' worth of crops, shrubs, and trees. The sooner the public realizes the incalculable economic value that the wild birds possess the sooner will prosperity return. Incidentally, we shall be more than repaid by the pleasure of the birds' beauty and song. Loving Nature's creatures will make us bigger and better."

Follow Mr. Charles E. White to his home in Kenilworth, Illinois, on the north lake shore, and there you will see him practising his collection of "bird sunshine." Likely as not you'll find him in his "working clothes," right in the midst of some improvement he is making for his feathered friends.

He does not spend prohibitive sums



SWUNG ALOFT.
An interesting bird house suspended between two grand old trees. Formerly it was a herring kit. Just a few additions to it, and an attractive dwelling was created. The box has been inhabited a major portion of the time it has been up.



THE WEATHERCOCK FEEDING HOUSE.

Vanes, extended at either end, catch the wind and turn the house broadside to the icy blasts. Thus are the birds protected from direct drafts all winter long.

in hiring gardeners, carpenters, and laborers to arrange things for him. Just as soon as he realizes the need of arranging a pile of underbrush here, or repairing a feeding box there he throws off his coat and "pitches in." His is rather a plan of expending his own individual effort and time. The devices which are liberally distributed about the grounds are all of his own manufacture.

Ask him what is required in a successful effort to attract the wild birds and you get but one answer—"Have a heart! Put it to work! Plenty of enthusiasm, a little spare time and less money! That's what we need right this moment to solve the whole problem!"

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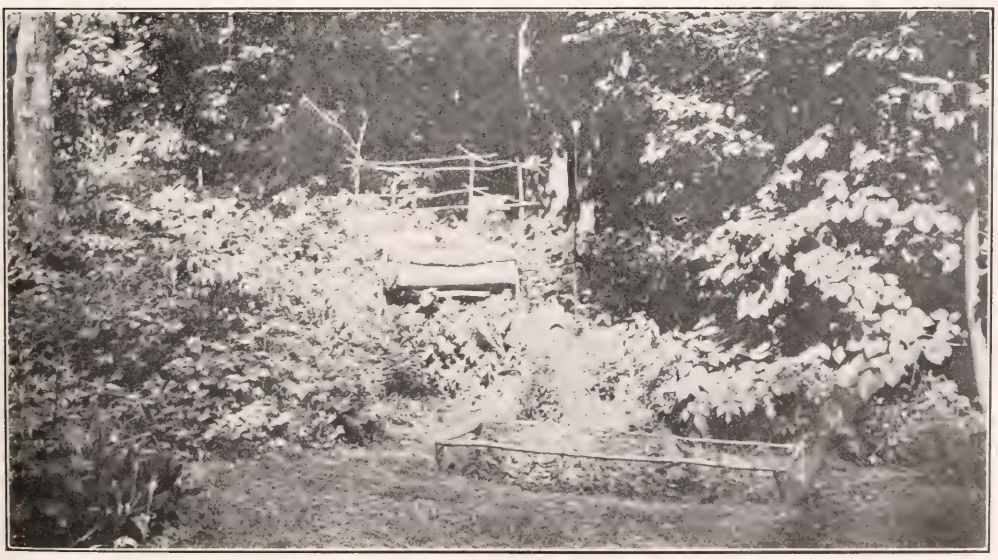
"So simple, so natural, so true," says Agassiz. "This is the charm of dealing with Nature herself. She brings us back to absolute truth so often as we wander."—David Starr Jordan in "The Stability of Truth."

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**Literary Note.**

Leo E. Miller, of the Roosevelt South American Expedition, writing in August Bird-Lore of the destruction of bird-life for commercial purposes in South America, states that in one warehouse in Buenos Aires he saw sixty tons of feathers of the Rhea, or so-called South American Ostrich. The feathers were all from killed birds, and were designed to be used on the manufacture of feather dusters, but their shipment to the United States, the only market for their sale, was prohibited by our recently enacted law, which prevents the importation of feathers. In the same warehouse Mr. Miller writes of seeing many thousands of skins of the Argentine Black-necked Swan, killed solely for the purpose of making powder-puffs.

The aigrette-bearing Herons, Mr. Miller learned, are not only shot at their nests, but are killed by scattering poisoned fish on their feeding-grounds



THE RUSTIC BIRD BATH.

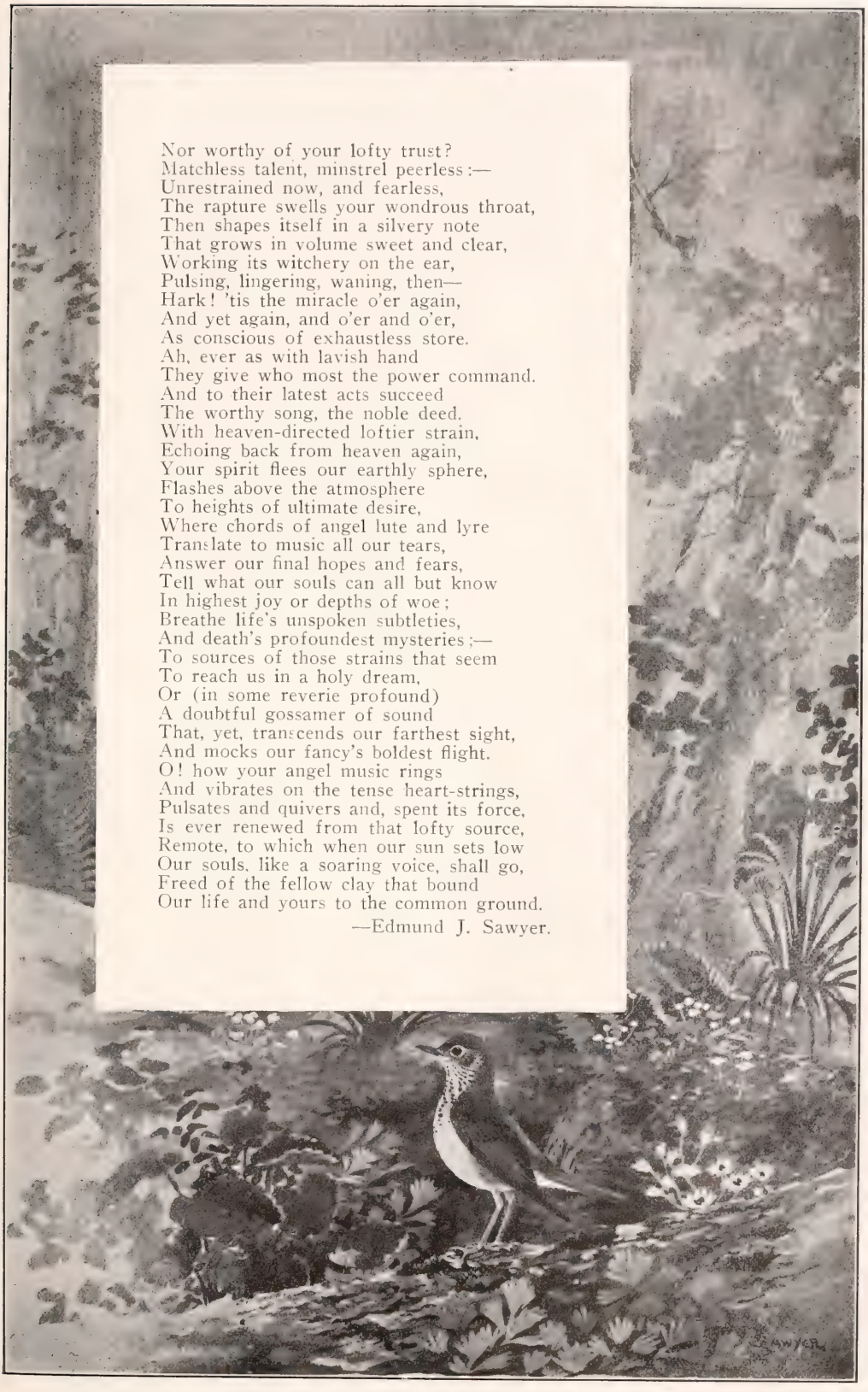
Atlantic City may have its charms for humans, but I wonder whether they outshine the pleasures offered by this novel bath to the wild birds. At times seven varieties have been observed in the "plunge." They were so happy that they paid but little attention to their fellow bathers.



# To a Woodland Thrush

Dweller in coolest woodland bowers;
Spokesman for timid wildwood flowers;
Knower of what the ferns would say,
And darksome pines as they sigh and sway:—
These find in you when darkness fades,
Yet lingers in their woodland shades,
The poet of their mute appeal,
A voice for all they strangely feel.

And in your later anthem, lo,
Are glories of a sunset-glow
Which touch your song with wizard fire
And link your voice with an unseen choir.
When, hushed, the dimlit-vernal wood
Seems rapt, as in a prayerful mood,
And dewy censer scent of flower
Hallows the stilly vesper hour,
Gently, softly you touch the strings,—
Timid, throbbing, soulful things;
Can e'en you feel you are but dust,



Nor worthy of your lofty trust?
Matchless talent, minstrel peerless:—
Unrestrained now, and fearless,
The rapture swells your wondrous throat,
Then shapes itself in a silvery note
That grows in volume sweet and clear,
Working its witchery on the ear,
Pulsing, lingering, waning, then—
Hark! 'tis the miracle o'er again,
And yet again, and o'er and o'er,
As conscious of exhaustless store.
Ah, ever as with lavish hand
They give who most the power command.
And to their latest acts succeed
The worthy song, the noble deed.
With heaven-directed loftier strain,
Echoing back from heaven again,
Your spirit flees our earthly sphere,
Flashes above the atmosphere
To heights of ultimate desire,
Where chords of angel lute and lyre
Translate to music all our tears,
Answer our final hopes and fears,
Tell what our souls can all but know
In highest joy or depths of woe;
Breathe life's unspoken subtleties,
And death's profoundest mysteries;—
To sources of those strains that seem
To reach us in a holy dream,
Or (in some reverie profound)
A doubtful gossamer of sound
That, yet, transcends our farthest sight,
And mocks our fancy's boldest flight.
O! how your angel music rings
And vibrates on the tense heart-strings,
Pulsates and quivers and, spent its force,
Is ever renewed from that lofty source,
Remote, to which when our sun sets low
Our souls, like a soaring voice, shall go,
Freed of the fellow clay that bound
Our life and yours to the common ground.

—Edmund J. Sawyer.




SWALLOWS IN MIGRATORY FLOCKS.

**Incidents in Autumn Migration.**

The mystery of bird migration is one of the comparatively few yet remaining in the remarkably developed science of ornithology. It seems pretty well established that in general our migrant birds make their annual spring journeys from a desire, however unconscious or subconscious it may be, for seclusion during the nesting period. How do they know there will be seclusion and food and greater safety in the north? The desire for seclusion is no reason for their flight in the autumn. Their movements at this time are most profoundly mysterious than in spring. Many of these migrants are capable of withstanding our severest weather, individuals being found here throughout the winter, yet these species leave in a body while the weather is still fair and their favorite food abundant. Witness a flock of robins on the eve of their departure for the South, frolicking in this halcyon weather, feeding to the limit of desire on their favorite wild cherries, mountain ash berries and such fruit. Consider the fact that fully seven out of ten of these birds are the young of the year, and with no knowledge, in any ordinary sense of the word, of other climes. From what to-day would seem to be a bird's paradise of ease and plenty, they will to-morrow be gone. We know many interesting secondary facts about this phenomenon, but the problem itself remains.

Migration really begins long before autumn. As early as August I hear the lisping voices of warblers as the first of these birds pass in the early hours of the night. Other species are already gathering in flocks preliminary to leaving. Notable among these are the chimney swifts. These collect every evening about some favored, unused chimney, and for an hour or so they circle about, passing directly over the chimney at one point; one or two then fold their wings and drop in out of sight; the rest follow in ever increasing numbers until the last bird finally flutters in. Standing in a room beside such a chimney, I have heard the clamor of two hundred chattering swifts, and the fanning of four hundred wings as the birds clung to the bricks.

Once the migratory flight is begun the birds seems to be guided to a considerable extent by certain features of the landscape. Coast lines and river valleys are favored routes. In rainy or cloudy weather the species which fly at night often descend to two hundred feet and less from the ground. They are then often attracted and confused by any prominent artificial light. Thousands perish by striking against lighthouses and other illuminated

structures. I once witnessed such a disaster in Lincoln, Nebraska. The attraction in this case was the electrically lighted dome of the state capitol. From the lawn below I could distinguish spotted sandpipers, various sparrows and warblers. Most of the birds passed the dome though they might hover awhile about the lights; but many, striking the pillars of the cupola, fell to the roof dead or disabled. If I may judge from the number of dead and crippled birds on the lawn, the mortality must have been great, yet it could have been only a handful compared with the thousands which I saw or heard passing for two hours or more in an unbroken flock. Most of the crippled birds that I found were black-throated buntings.

One satisfaction is to see what immense numbers of birds manage to run the gauntlet now so thickly beset with machine guns, air guns and other "snares of the fowler." These additions to the host of checks which nature had already imposed on their undue increase seem little or not at all to affect their numbers. It is where flesh or plumes become an article of



CHIMNEY SWIFTS GOING TO ROOST.

greed or of commercial importance that by man's agency alone alarming inroads are quickly made on the members of a bird species. None of our birds from flocks which at all compare in size with those of the now extinct passenger pigeon; yet there are men who still remember seeing these pigeons in flocks of millions.

In watching large flocks of migrating birds one has an especially good chance to see albinos. In a flock of purple grackles I once saw a bird immaculately white. He alighted on a fence post while the rest of the flock were on the ground about and beneath him. My brother and I followed the birds from field to field, hoping for a closer view of the albino, till at last the flock rose and flew out of sight. As they did so my brother remarked that the white bird looked like a piece of paper being carried along with the flock by the rush of air from their wings.

For some reason, perhaps because most of them are young, these autumn migrants appear more liable to confusion in their progress than do those of the earlier flight. This has been especially noticed with grouse, which are now often found in such unusual places as the roofs of houses and the front porches of city dwellings. They often crash through the windows of stores and of other buildings. But other species also are likely to stray from their normal haunts at this season. Could any situation be more unique than the brass railing of a ticket window in a terminal like that of the Rock Island Railroad in Chicago? Yet it was there that I once found a yellowthroat unconcerned about everything but the flies that he was industriously snapping

That autumn I picked up an ovenbird from a lawn in the residential section near Washington Park. No "marks of violence" were on the bird and he would eat freely even from my hand. I kept him in a roomy cage until, after a week or more, he was accidentally drowned in a dish of water put in for a bath.



THE ALBINO BLACKBIRD.



"SHIPS THAT PASS IN THE NIGHT."

**Wasps Killed Fourteen Ducks.**

Middletown, Connecticut.

To the Editor:

I am sending a tiny insect (or a portion— I don't know which) that has caused considerable trouble among my ducks this summer. I have had hatch about sixty-five or seventy ducks, and among the different broods at different times in the season this little insect has killed fourteen. Of course the little ducks are great "bug catchers," and this insect fastens in the roof of the bill and can only be extracted with tweezers, and soon after the duck dies in a sort of convulsion. Should you pass the stinger of this insect over the hand after taking it from the duck's mouth, it would force itself into the flesh almost immediately and cause a burning, smarting, itching sensation which lasts some time and the unpleasantness will spread over considerable surface. I never had any dealings with this insect until this summer, and I wish I might know whether the specimen I send is the whole or part of the insect.

Yours truly,

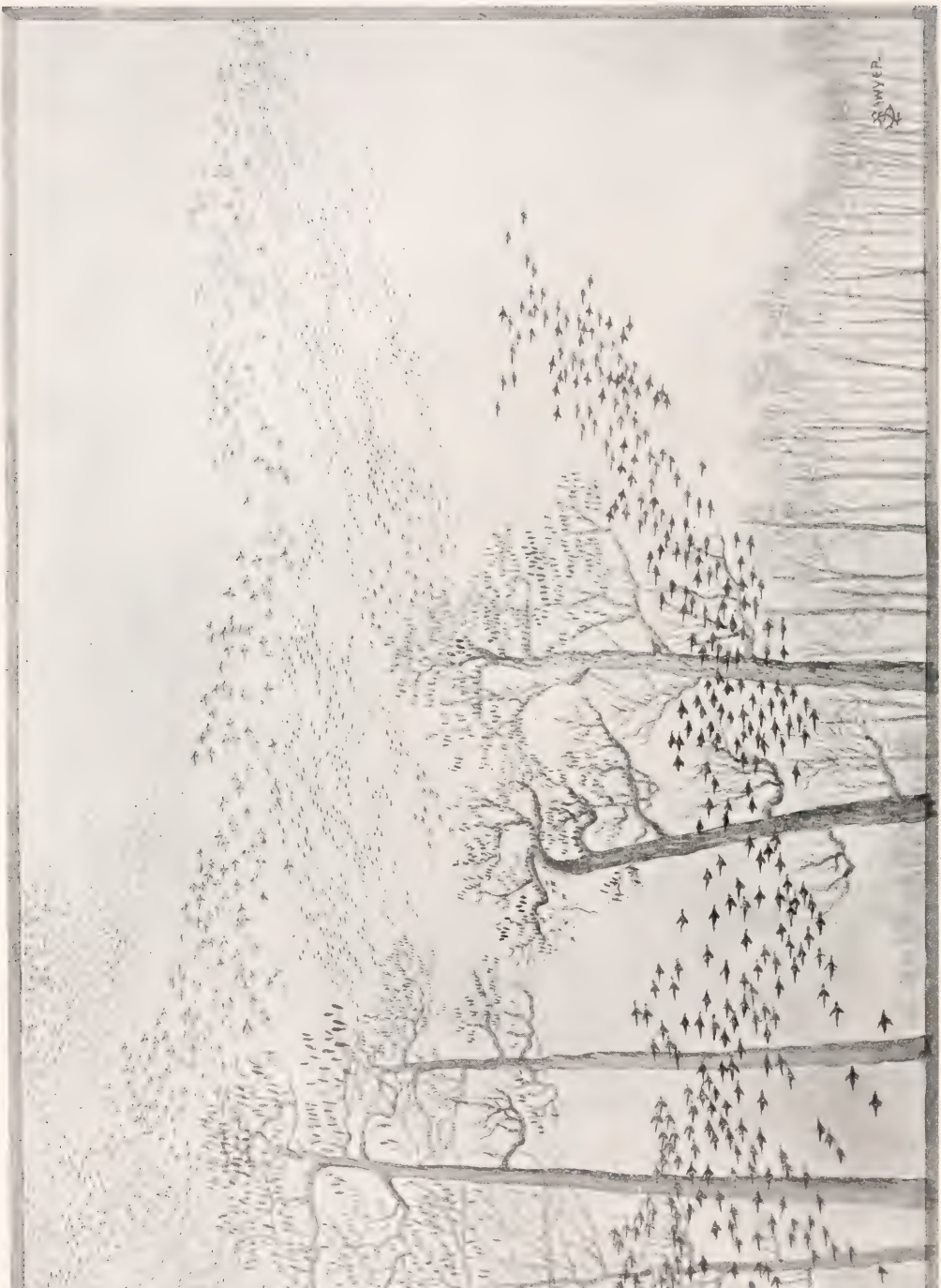
Mrs. F. E. Deming.

Your correspondent has extracted from the roof of the bill of one of her little ducks the stinger and the end of the abdomen of some wasp. The rest of the insect has disappeared. It is most interesting to know that fourteen ducks have been killed by such stings. Of course it is impossible from the stinger alone to know exactly what the insect may have been, but it is undoubtedly one of the wasps.—L. O. Howard, Chief of Bureau of Entomology, Washington, D. C.

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O Nature, gracious mother of us all,
Within thy bosom myriad secrets lie
Which thou surrenderest to the patient eye
That seeks and waits.

—Margaret J. Preston.



THE VANGUARD.

A drawing based on the descriptions of early writers and eyewitnesses and particularly from data kindly furnished the artist by Mr. W. B. Mershon, a recognized authority on this species. This would have been regarded as but a small section of a typical flock fifty or sixty years ago. The passenger pigeon is now considered extinct.

The last passenger pigeon died several years in the Cincinnati Zoological Garden died Sept. 1, 1914.—Ed.

# THE STARRY HEAVENS IN OCTOBER

## The Starry Heavens in October.

BY PROFESSOR ERIC DOOLITTLE OF THE UNIVERSITY OF PENNSYLVANIA.

Our first autumn month is always distinguished by the entrance of the beautiful star group Taurus—the first of the bright train of winter constellations—into our evening sky. At nine o'clock all of the constellations will have risen from the ground except the bright star which marks the extreme tip of the lower horn of the Bull, this, in turn, appears a few minutes later and the whole constellation, with its two beautiful bright clusters known as the Hyades and the Pleiades, will be seen in our evening heavens, to remain with us throughout the entire winter.

### The October Stars.

Following along the eastern horizon toward the north, we meet next the bright star, Capella, now at about the same height from the ground as the Pleiades, that great golden sun so exactly like our own sun but so immeasurably larger, while above this we find the group of many rather faint stars known as Perseus, among which is the remarkable eclipsing star at B, Figure 1. This star will be darkened this month on October 14, at 11:30 P. M., on October 17 at 8:15 P. M., and




Figure 1. The Constellations at 9 P. M., October 1. (If facing south, hold the map upright. If facing east, hold East below. If facing west, hold West below. If facing north, hold the map inverted.)

at the constant interval of two days, twenty hours and forty-eight minutes thereafter.

Above Perseus is the large constellation Andromeda, with its wonderful nebula at N, while beyond Andromeda, riding high in the southeast, is the so-called Great Square of Pegasus. An excellent test of one's keenness of sight and of the excellence of his station for observing is readily made by merely counting the number of stars which he can detect with his naked eye within the borders of this square. In making this observation a perfectly clear, moonless night should be selected and the observer must be careful to be away from all artificial light. Argelander, a celebrated German astronomer, who made a great catalogue of three hundred thousand stars, stated thirty as the number visible to the eye under the best conditions. Another astronomer, under a wonderfully clear sky near Athens, counted no less than one hundred two. If the observer detects from twenty to thirty, however, he may be satisfied that both his eye and the seeing at his station are excellent.

There are certain special advantages to be gained by a simple study of this kind, for in this way the observer not only learns how to look for very faint objects, and becomes accustomed to doing so, but he also becomes able to judge of the excellence or poorness of any selected night for general observations. After having made this study under the favorable conditions here mentioned, he will doubtless be surprised at the great multitude of other faint objects which he will detect in all parts of the sky and which would have been wholly invisible to him had he looked only at the brighter star groups and taken no pains to secure the best conditions for his observing.

### The Planets in October.

By far the most striking object now in the heavens is the brilliant planet Jupiter, which shines out with its steady, golden radiance, well up from the ground in the south, a little to the west of the meridian. For many years past this planet has been so far south

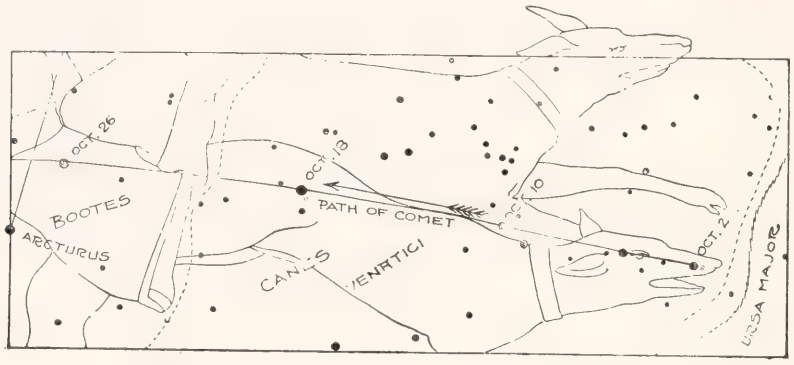



Figure 2. The path of the new comet during October.

of the Celestial Equator that it could never mount high in our heavens, but its slow, steady, upward motion is now well under way. It will pursue the path EVH, Figure 1, reaching V on February 10, 1916, and will then pass through Taurus and afterward reach the summer solstice some three years later. It will then be seen shining in our evening heavens from a higher position than the sun reaches, even in midsummer.

To watch the moving moons of this planet and its ever changing markings is always an observation of much interest. Many eclipses and other phenomena of the moons occur this month. For example, on October 11 the third moon will emerge from behind the planet at 7:09 P. M., this moon will next enter the planet's shadow and be eclipsed at 8:29 P. M. The first moon will begin to transit across the planet's disc at 8:32, and will pass off of the disc at 10:52. Finally, the third moon will emerge from its eclipse at midnight.

Venus, which now shines low in the southwestern sky after sunset, will reach its greatest brilliance on October 23, and even at the beginning of the month it is no less than eight and one-half times as bright as Jupiter. But, unfortunately, it is running very

rapidly southward throughout the entire month and finally reaches a position nearly twenty-eight degrees below the equator. Consequently it is seen setting very far in the southwest and always remains very near the ground so that its extraordinary brightness is hardly realized. Through the telescope this world is now seen as a beautiful and rapidly narrowing crescent.

Mercury reaches its greatest distance east of the sun on October 15 and may be detected, for a few days before and after this date, low in the southwest just after sunset. This planet is, however, so far south of the equator that the present elongation is not a very favorable one.

Saturn is in Gemini and just beyond the borders of our evening map, for on October 1 it does not rise until half-past nine o'clock. By midnight, however, it is high in the heavens, and throughout the remaining hours of the night it is in excellent position for observation.

Mars is now lost in the sun's rays and it appears much too nearly in the same direction as that body and it is much too far from the earth to be satisfactorily observed. It will not finally leave the evening sky and become a morning star until December 23.

Uranus is in the constellation Capricornus, a little to the west of Jupiter. This planet moves very slowly westward until October 18, on which date it becomes stationary and then begins again its eastward motion among the stars. In consequence of this, its position in the sky changes but very little throughout the entire month. If the observer possesses a telescope with circles, or if, wanting this, he owns a good star atlas, he may readily find this seldom seen planet between the dates of October 16 and 21. Throughout this time the nearly stationary planet is six degrees thirty-five minutes exactly north of the star at D in Figure 1. He may therefore accurately mark its position in his atlas, or he may point his telescope first at the star and then carefully direct it exactly six degrees thirty-five minutes farther north. The planet when found will appear as a greenish star of the sixth magnitude, but it will shine with a steadier radiance and with a duller lustre than a star. Its obscure shadings and its four moons are only visible in the very largest telescopes.

Neptune is in the constellation Cancer, and is therefore not seen in the evening sky.

On the early morning of October 15, observers in the eastern and southern states may see the waning, crescent moon pass over the bright star Regulus. The star will disappear at the bright edge of the moon at about 3:30 A. M. and will re-appear from behind the bright edge about one hour later. On October 21 at 9 P. M. the moon will similarly occult Venus, and on October 26 at 2 P. M. it will pass over Jupiter, but neither of these occultations will be visible from the United States. On the evenings of these dates, however, the moon and the respective planet will be seen to be very near together, forming a beautiful figure in the sky.

### The New Comet.

The interesting new comet, which it is hoped will become visible to the naked eye, will follow the path shown in Figure 2. It is very unfortunate that this path, as may be seen from Figure 1, remains always so very near the ground. Telescopic observations thus far indicate that the comet is fully as bright as was anticipated and it is therefore strongly hoped that it may become clearly visible to the naked eye notwithstanding its unfavorable position. In any event, it will be a conspicuous and interesting object in a small telescope.

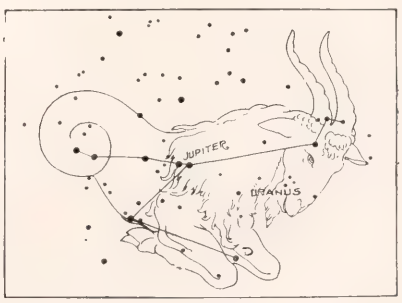



Figure 3. The Constellation Capricornus, enlarged from Figure 1, to show the position of Uranus.

## A Man-Eating Tiger.

BY BESSIE L. PUTNAM, CONNEAUT LAKE, PENNSYLVANIA.

The fiercest tiger of India is not naturally a devourer of human flesh, which it never touches unless forced by hunger or close contact; but having once tasted the delicacy, it absolutely scorns all other food. It may not acquire the habit until old age, when poor teeth, with lack of strength and agility, render it unable to catch its usual wild food; but the habit once acquired is never abandoned. A missionary returned from India tells of one of these man-eating tigers that for many months kept the natives of a large territory in terror, the range of the beast being at least three hundred miles in extent.

At first it snatched up children at their play. Without warning, it would dash out from some hiding place, having evidently been watching its victim, and a child would be missing from the group. Then it fell upon the women as they went with their stone jugs to the well just beyong the village. They outwitted it by moving in bands too large for it to feel safe in attacking, or they left water carrying to the men who were armed.

Next it fell upon the postmen. It was the custom for natives to carry the mail from one town to another on foot. A man would sling it one one end of a pole with several jingling rings attached to the other end. Carrying this over his shoulder, he jogged along at a sort of a dog trot, the jingling of the rings announcing his approach. The average "beat" of a carrier was about ten miles, when he was relieved by a mate.

As much of the route lay through the jungle country, the roadside overgrown with tangled vegetation, it was an easy matter for the "man-eater" to lie in ambush, and to spring out as the carrier passed. Mail carrying soon became too dangerous to be popular, and it became almost impossible to hire any one to act as a postman.

A large band of natives was in the meantime trying to kill the monster, but no matter how carefully the plans were laid, it always managed to escape. When the men were sure that they had it in close quarters in a certain locality, it would be reported a hundred miles away, and working its old tricks.

Finally a British professional tiger hunter was secured. After proving the usual tactics useless in the case, he adopted the garb of the mail carrier, slinging the bag and the rings on his gun. He had not jogged far on his beat before the tiger sprang at him; but the hunter was wary and quick, and the beast was mortally wounded. The joy to the natives was unspeakable, for they had for months been living in constant dread. How many human victims were secured will never be known.

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## Free Instruction in Chemistry.

Professor Elton R. Darling, 149 Morgan Street, New Bedford, Massachusetts, who is a member of The Agassiz Association, offers to assist members who are interested in the study of chemistry. He will inform such students what to obtain in the way of simple apparatus, and give them whatever assistance they may need free of all expense, and each course will be arranged to meet individual requirements.

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## My Creed

"My creed is work; to follow duty's call
However far it lead across the plains—
Through trackless woods, or ringing on the hills;
To seek for pleasure in the realms of toil—
Still ever striving for a larger self
With which to do a service for the rest.

"To lay a new path through the unknown way,
And leave some heritage e'en though so small
No other hand would love or care to leave.
Rejoicing ever in my brother's craft,
To follow system and the perfect law—
Be what I am, and do my very best
To lead a life which towers above the hills,
And points the way across the plains to God."

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### White Poppies.

The poppies have awakened
To lure of sun and breeze,
And spread their snowy beauty
'Neath overarching trees.

They lift their cups to Heaven,
They droop with sudden showers,
And gleam through dusky shadows,
The moonlight of the flowers.

—Emma Peirce.

# THE AGASSIZ ASSOCIATION

Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

### Increase in Membership.

Mrs. E. Winters, River Forest, Illinois.

Mr. Charles E. White, Kenilworth, Illinois.

Mrs. R. G. Hinton, New York City.

### Recent Cash Contributions.

| | |
|---|---|
| George M. Gould, M.D., Atlantic City, N. J. | $ 5.00 |
| Mr. Samuel P. Avery, Hartford, Conn. | 25.00 |
| Miss Amy Folsom, Asticon, Me. | .20 |
| Mr. Ellis B. Noyes, Portsmouth, Va. | 1.00 |
| Mrs. Charles E. H. Phillips, Glenbrook, Conn. | 5.00 |
| Mr. Arthur A. Carey, Cambridge, Mass. | 5.00 |
| Miss Katie M. Roads, Hillsboro, O. | 1.00 |
| Honorable D. O. Wickham, Cleveland, O. | 10.00 |
| Miss Dorothy A. Baldwin, Cambridge, Mass. | 5.00 |
| Mrs. W. R. Sidenberg, Greenwich, Conn. | 1.00 |
| Mr. Arthur F. Estabrook, Boston, Mass. | 25.00 |
| An AA Member | 20.00 |
| Mr. Ellis B. Noyes, Portsmouth, Va. | 1.00 |
| Mrs. Fitch A. Hoyt, Stamford, Conn. | 5.00 |

### Contributed Specimens.

W. E. Lewis, Glenbrook, Connecticut; cedar cone taken from Lookout Mountain, Chattanooga, Tennessee; piece of red cedar from the tree to which General Bragg's horse was tied during the battle of Missionary Ridge; piece of willow oak from Chicamauga battle field; postals of various places in Chattanooga.

Miss Poloma Engle, Sound Beach, Connecticut: hornets' nest with curious, tube-like extension; moth.

Miss Ilse Engle, Sound Beach, Connecticut: Prionid or long-horned beetle.

Mr. V. F. Fox, Stamford, Connecticut: ground beetles.

Mr. Charles Tippman, Sound Beach, Connecticut: bat.

Mr. Frank Griffin, Stamford, Connecticut: Sphinx moth.

Principal Lee Dollinger, Sidney, Ohio: drone and queen bumblebees and drone wasps.

Miss Happy Potter, Sound Beach, Connecticut: very long, hair-like, aquatic worms.

### Will Contribute a Dollar a Month.

Portsmouth, Virginia.

My dear Mr. Bigelow:

I have long wondered how you could manage to hold on and keep things moving as you have, and feel sure you must have made very heavy sacrifices to do it.

My own finances are not extensive and the calls are many but I will agree to send one dollar a month for a year to come as a contribution toward putting things in better shape. I can do this more easily than I could make a contribution of five dollars outright, and it would seem as if there must be some others who could do the same. Even a hundred would help a lot I should imagine.

It seems strange, as you have already said, that when so many causes can get almost unlimited contributions this most worthy enterprise seems unable to even starve so small is the help it gets.

Hoping a way may yet be found to obtain necessary funds,

Yours most sincerely,

ELLIS B. NOYES.

### A Personal Letter from an AA Member.

Atlantic City, New Jersey

To the Editor:

Just a few words to let you know how I am getting on down here at Atlantic. Have been doing some fine collecting in several adjacent fresh-water ponds which abound in all sorts of micro-aquatic life, and have added many new and beautiful specimens to my collection of Rotifers. Here is a list of objects observed and enjoyed, all from a small lake at Oceanville, a hamlet about twelve miles north of Atlantic City. Many Entomostraca including species of Daphnia, Cyclops, Cypris, Camptocercus, Alonopsis and several genera not yet identified by me. Many Stentors including S. Barretti, an interesting little building species; S. igneus, S. polymorphus and S. coeruleus. This water is simply alive with these forms, all beautiful and interesting objects. Many Desmids among which were Cosmarium, Docidium, Spirotaenia, Micrasterias (many species) and Closterium.

The underside of lily pads swarm with many genera and species of aquatic worms and larvae almost too numerous to mention. I have preserved many of these but have not identified them as yet. This also applies to numerous beautiful and variously colored mites.

In this soft water I have found many Rhizopods and have preserved beautifully formed and colored tests the most numerous of which are Difflugia pyraformis.

I found Hydra viridis and H. vulgaris in abundance with many in process of reproduction by gemmation. Of course, diatoms were plentiful. This should prove a prolific ground to the student interested in these minute vegetable forms. Among Rotifers collected I have Noteus, Anuraea, Cathypna, R. vulgaris, Philodina, Notommata and Euchlanis. Melicerta ringens is plentiful. I have also about a dozen forms never before seen by me. I shall try to place them next winter when I have the advantage of my library and of my laboratory facilities.

Among the many fresh-water algae the most prominent were Batrachospermum, Spirogyra (several species) Chaetophora elegans, Mesocarpus and others.

I found many exceedingly small but beautiful caddis worms in cases and have preserved some for you which I will send when I mount them on my return home next fall as they are small enough to be mounted in a cell on a slide. There is also another pond on what they call the Zion Road, situated about seven miles from Atlantic City. The microscopical fauna and flora of this body of water are about the same as those of Oceanville Lake, with the exception of a large and beautiful species of Micrasterias, also many large and small Protozoa. I found several Rotifers in this pond which are new to me. I cannot refrain from mentioning the exquisite colonies of Conochilus volvox which abound. From the foregoing you can see that although Atlantic City is a seaside resort, there are good grounds near-by for the student of pond life and of aquatic microscopy.

Sincerely yours,

FRANK J. MYERS.

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### Visited Jean-Henri Fabre.

One of our friends, Mrs. Samuel M. Conant of Dudley, Massachusetts, sends us the accompanying picture of Jean-Henri Fabre, and under date of August 2, 1914, writes us from Marseilles as follows:



JEAN-HENRI FABRE.

"Last Friday I had, through my being fortunate enough to be travelling through Serignan with the American Consul and his wife, a wonderful call upon Henri Fabre. I walked in his garden, saw his workshop, but best of all looked into the beautiful eyes, and held the hand of this precious human who has done so much for all who love nature."

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**October.**

The year grows old,
The wind blows cold;
And orchards turn to mounds of gold;
A brownish tint on leafland wall,
And woodland's garb begins to fall;
The green in pasture grasses ebbs,
The dew transforms the spider webs;
Brown seeds take flight,
For next year's site,
And frost appears on mountain height.
—Robert Sparks Walker.

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## This One Thing We Do.

We frequently receive advice both personal and epistolary in regard to the various side issues of human endeavor that we should take up. Especially since we have devoted considerable space to the nature interests of certain large estates, we have been strongly advised to make this magazine wholly local, and to devote it to suburban and country interests. We reject that advice. We shall continue to deal with old Mother Nature whether we find her in loving companionship with the wealthy man or the poor man, with the cultured or the uncultured, with the learned or the ignorant, with the appreciative or the indifferent. Perhaps it is to the totally indifferent that we shall "pay our utmost endeavors."

Again we have been advised to take a deeper interest in the cruel treatment of fourfooted animals, in protecting birds from slaughter, in furthering the interests of the Boy Scouts, in developing the work of The Camp Fire Girls. And we have even been urged to open a department for the Daughters of the American Revolution, and to take an interest in the collecting of coins and of old china. One well-meaning friend has frequently buttonholed us in a sincere interest for the prosperity of our work, and has told us how many well-to-do people are interested in historical matters, and that we should have a department devoted to civil history. Our mission is to do not these commendable things, but to exploit natural history.

The most frequent of all these well-meaning suggestions and appeals is that we should adopt and advocate the so-called reformed spelling. And here our friends try to land an effective shaft by eulogizing the scientific interests of the management, and stating, as a sort of unanswerable conclusion, that, "If you are scientific, you should take an interest in the scientific improvement of the language." Let us go back to the original, "This one thing we do." We are here to introduce nature to humanity and humanity to nature, and that problem is all that we care to attack at present. We will adopt the reformed spelling when those do so that are mightier than we in literature, but so long as such magazines as "The Century," "St. Nicholas," "Harper's," "Scribner's," "The Atlantic Monthly" and others do not adopt this so-called improvement, we will not.

Not long ago we witnessed an attempt to revolutionize the world that would have been comical, if it had not been so painful. A very small magazine was started in a commendable effort to induce people to equip and properly. care for aquaria in the home There are a few people in the world who love aquaria; there are others who would keep aquaria if they were told how, and were interested in living fish and various forms of aquatic plants. It really seemed as if that magazine would do good work and sufficient work if it should arouse a general interest in aquaria, but every paragraph, every line, almost every word showed by precept and example that reformed spelling was the great and only thing. One became so entangled in the Josh Billings vocabulary that it became somewhat difficult to find amid so much insanity the sane aquarian interest. We have also had a similar example of a struggling, yet commendable publication pertaining to birds on the western coast. Birds are a pretty big topic and it seemed as if it in itself would be amply sufficient without attempting to reform, upset or change, whatever you may call it, the entire English language. But great as is the topic of aquaria, and perhaps

even greater that of birds, general nature is more comprehensive and as important. If this magazine had two hundred pages in one issue, we could easily fill them and hold the reader's attention to nature in general. We should even then not feel, as at present we do not feel any need for reformed spelling.

Some of our best friends, those whom we hold in high esteem, are well-meaning in their interest in that kind of spelling, and in their efforts to induce us to adopt it. The reasons already given are the principal and amply sufficient ones to show that we shall still continue to plod along in the ways of The Century Dictionary and Webster's, except when proof reader or the printer makes "a slip."

If I may be permitted to sit down in a quiet way by the great solid rock of personal reasons, as mentioned in the foregoing, for a personal word with the reader, I will state that I am not in favor of the reformed spelling. Nobody cares much for a personal opinion, but I trust that mine will be respected as I respect that of my well-meaning friends. I am a naturalist and sincere lover of the wild, the picturesque and the original in nature. I like the things that have grown out by themselves; I want nature to go forward untrammeled. I have brought down upon my head the unfavorable criticism of some of my best and thriftiest friends that have visited ARCADIA, because we there do not use a lawn mower. I want the wild grasses, yes, no harm if even now and then a weed, to go clear up to the travelled walk. I want a real ARCADIA of all nature, where things may be untrammeled and do as they please; where the spiders and the insects may revel in an accessible wilderness. I want a home for the moles and the white-footed mice, for the wasps, and the bumblebees, for the centipedes and the other "thousand leggers." These are not all cut and carved to one pattern, and ARCADIA is not and never will be a smoothly mown lawn Not everybody appreciates and values this point of view, and I respect the sentiments of those who do not, but politely and firmly reject them.

I feel in a similar way toward spelling. I want the natural growth of the English language as it has come to us from our forebears. I admit that some words are spelled in a rather curious way. They demand quite a lot of labor, but the diversity thus obtained is picturesque. I admit that spiders' webs meshing the grasses up to the sidewalk do not give the finished, polished appearance of a lawn mowed every day, but somehow I like the spiders and do not object to the webs. I like the irregular mountain peaks, the old crooked rail fences here and there and now and then a dilapidated stone wall. These appeal to me in a more touching way than a wall of perfect lines in smooth white concrete. I like the irregularity of mountain peaks, and I love a meandering brook more than the farmer's geometrical ditch. I like individuality of opinion. There are few things more charming than the enthusiastic remarks of some of my friends that tell us of the beauties of reformed (?) spelling. I like a world of differences. I do not want everybody to agree with me, and I ask for myself the privilege of not agreeing with them. It is delightful to meet varying types of people. It is pleasing to talk with even the uncultured. Only a few days ago a colored man told me of his experiences in digging, how he found two trees grown together so that the stumps were practically one stump. He told it in simple language and he repeated the story three or four times. His eyes glistened with enthusiasm and his voice showed that he meant every word he said. That was admirable; that was genuine.

I have listened to the well-balanced, ponderous, rotund sentences of the eloquent orator and I like them too. I enjoy my letters from the learned professors in the universities, but in all this world can there be anything more charming than now and then a letter from a child or from some unlearned person with about half the words misspelled (but not reformed), and every first personal pronoun a small I? I do not want all the people to agree with me; I do not want to see everybody cast in the same mold; I do not want to see all our English words like rows of pins on a paper.

# The Guide to Nature




VI. VII NOVEMBER, 1914 No. 1

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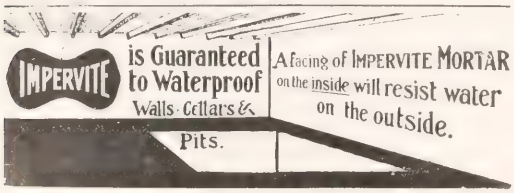
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### Do Not Mind the Lunatics.

I have just returned from Rockport, Indiana, where an interesting trial was in progress. A young man had killed an old man who disliked whistling. The old man had moved from Kansas because the people there whistled whenever he appeared in the street. In his new home he struck the young man for whistling. The young man retaliated by killing the assailant with a blow from a rifle breach.

Many anecdotes were current relative to the old man's idiosyncracies. Only a few weeks before his death he was riding on the traction railroad. In the same train an attendant was taking a young woman to a sanitarium. Her mania, due to cerebral overstrain, was the hugging and kissing of men.

At a small station a fine looking drummer entered. He was no sooner seated than this young woman, eluding her attendant's grasp, ran to him, sat in his lap, clasped her arms around his neck, and kissed him. In this she was as innocent as the little child that kisses her father. The astonished man fled to the smoking car, and complained to the conductor. The matter was explained, but after he had lighted a cigar to soothe his shattered nerves, he began to whistle softly to prove that he was not perturbed. The dissentious old man just across the aisle, at the sound of the first few notes, seized the unsuspecting traveler, dragged him out of the seat and violently shook him, shouting in the vilest language that whistling was forbidden in his presence. Another explanation from the conductor and a laugh from the passengers followed, but the drummer declined to hazard a third experience. At the next station he telegraphed to his firm, "Cancel assignment to this territory. Nobody here but lunatics."

### He Expressed the Idea.

A teacher said to the class, "The newspapers have recently been saying that the war will not be settled but will be fought to the bitter end. Who will go to the blackboard and give us another sentence containing that expression, 'bitter end?'"

A boy promtply volunteered and wrote another war-like expression!

"The dog chased the cat and when he got her he bit 'er end."

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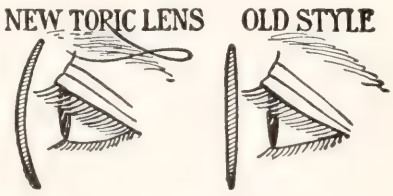
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### Definitions that Define!

As the reader may not be entirely familiar with the characteristics of the cony, the new Standard Dictionary's description may be quoted: "A daman or hyracoid ungulate, as *Hyrax syriacus,* identified with the cony of the Bible; an ashkoko." This identification may be matched for intelligibility to the ordinary inquirer with that of "crawfish" in the Century Dictionary: "The common name of the small fluviatile long-tailed decapod crustaceans of the genera *Astacus Cambarus.*" These definitions may be well enough for scientific purposes; other works describe the cony as a small, burrowing animal, resembling the marmot, found in Asia and America.—The Outlook.

THE GUIDE TO NATURE is always received with fresh inspiration, as every article seems to be one of uplift and encouragement. It seems to me that every number is better than the preceding one.—George W. Carver, Director Department of Research and Experiment Station, The Tuskegee Normal and Industrial Institute, Tuskegee Institute, Alabama.

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8451 Tunic Dress with Low Belt for Misses and Small Women, 16 and 18 years.

Simplicity in style and cut in combination with the low waist line make the essential features of the Moyen Age idea and this costume shows them. It is really a very smart frock, admirable for street wear in mild days, with perhaps the addition of a light shoulder wrap, and perfectly adapted to indoor occasions at all seasons. The circular tunic flares most gracefully over the narrow two-piece skirt and the two materials are combined most successfully in the body portion. Altogether the costume is youthful in effect and exceedingly smart.

### ArcAdiA Pet Squirrel Shot.

The pet gray squirrel that has attracted much attention from visitors at the Agassiz grove, ARCADIA, Sound Beach, was shot Thursday afternoon by two unknown vandals. They came directly for the purpose of shooting the squirrel, and returned at once, going across the golf grounds in the direction of Stamford. I was not at home at the time. The miscreants came near the home, and shot the squirrel where it was eating nuts that had been recently fed to it by members of the household, who were near-by when the beloved squirrel was shot. It is needless to say that their sorrow and indignation were intense. The "hunters" in an insolent manner picked up the dead squirrel and started across the grounds despite the appeals to leave it.

This squirrel was known to hundreds of visitors, and had become so tame that it feared no one. To go near to such a confiding pet and shoot it is not sportsmanship but deviltry.

### A Correction That Did Not Correct.

A woman after a long boat ride stepped on shore and said, "I am glad to get back on vice versa."

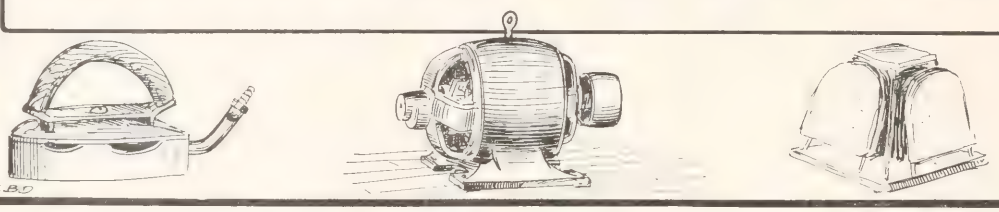
"No," said the man, helping her out, "you have made a slip of the tongue; you mean terra cotta."

Little Mary's mother, a facetious contributor to the "Ladies' Home Journal" tells us, was writing a letter to her sister one day, and Mary, who did everything her mother did, began to write also. As the little girl commenced her letter she looked up and asked, "Mamma, how do you spell 'Aunt'—the kind that ain't a bug?"

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**Another Argument for Publishers.**

A boy in a schoolroom wrote on the blackboard, "I can hug the girls better than any other boy in school.

Bill Jones."

The teacher, a young girl, said, "Did you write that?"

"Yes."

"Remain after school."

The other pupils waited outside. One inquired, "Did she whip you?" Another, "Did she scold you?" Another, "Was she very cross?"

But all the culprit said was: "I tell you it pays to advertise."

**The Blindness of Virtue.**

"We want the doctor, quick!"

"Who's sick at your house?"

"Everybody except me. I'd been naughty, so they wouldn't give me any of the nice mushrooms papa picked in the woods."

"The artist must never trouble himself with what is not worth while in his opinion, no matter how wonderful the same thing may seem to his companions. It is essential for all of us to be absolutely honest—to think that our thought to-day will not be the thought of to-morrow and to express it without any fear as to its ultimate truth or form."

# Our ARCADIA Page

## Analyze and Find the One Detail.

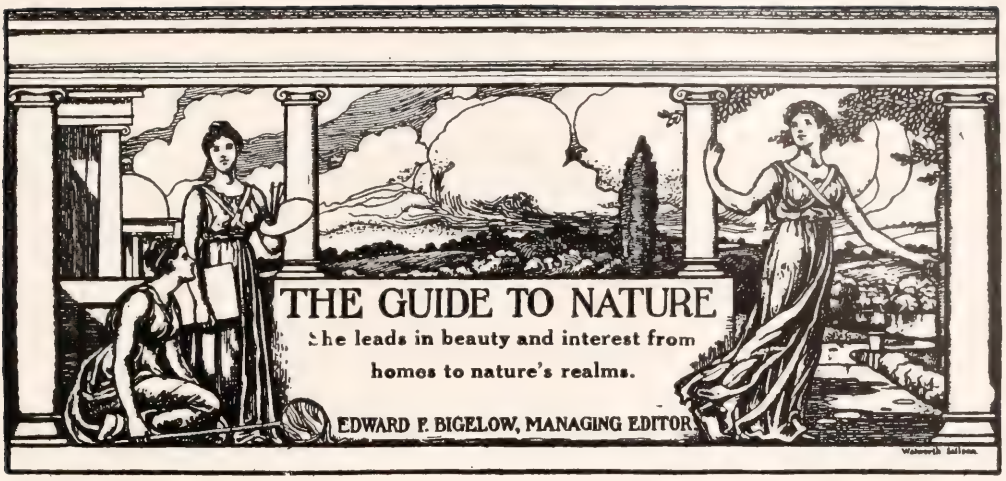
I have always loved Nature, and I always have been in the habit of taking a sketch book with me in my trips through the country and along the road. At every turn I would find something new to stimulate my attention until my mind became so full of the things that I had seen that I felt impelled to sit down and to paint them then and there. I would set about my work with the hope that I would get it all and put down everything that I had seen, but it is needless to say that I never succeeded. It was not until I learned that one detail in the entire scene was what had interested me that I made any progress at all. I finally came to a point where I would stop and look at a landscape and begin to analyze just what it was that had made me stop at that particular point. And I learned that perhaps it was a little group of trees or the line of a single hill, or perhaps two or three leaves of different colors blended strangely together. You have to mine from a landscape as you mine from a gold mine and reject the hundreds and thousands of things that do not move you—reject the whole mass, in fact, and keep intact and alone the little jewel that you have gleaned from it.

—Van Dearing Perrine.



VAN DEARING PERRINE—"THE MOST ORIGINAL FIGURE IN AMERICAN LANDSCAPE ART TO-DAY"—Richard Watson Gilder.

Great rocks, great trees, great rivers of themselves mean very little to me, except as symbols of a great Universal Power, and Eternal Vital Principle which makes and shapes tree and rock and river equally with myself. It is thus that I feel in this great Power—call it Eternal Motion, if you like—something linking me to all the universe, even to the remotest star, and linking all to myself. When I feel that I am awed and reverent. The whole world appears to me as one vast miracle, and I am part of the whole. It is this stupendous miracle of creation which takes possession of my thoughts and compells me to seek some form of expression, as men have sought in all ages. Some have found their means of expression in poetry, others in philosophy; I find mine in painting.




Published monthly by The Agassiz Association, ArcAdiA Sound Beach, Connecticut

Subscription, $1.00 a year  Single copy, 10 cents

Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII  **NOVEMBER.**  Number 6

# The Painter of the Palisades is at High Ridge.

**BY EDWARD F. BIGELOW, ArcAdiA: Sound Beach, Conn.**

VAN DEARING PERRINE, the famous painter of the Palisades, has fallen in love with the rugged rocks of High Ridge. He has decided to make his temporary home on the northeastern decline of those highlands, just where they gracefully slope and terminate in a long, winding picturesque valley.

For many years he has loved the Palisades. Now he will love High Ridge (just over the Stamford boundary in Westchester County, New York state) not for the artist's copy that it may supply but as a companion. He himself is rocky and precipitous in his nature—large, wild, rough, even savage, as hills and valleys are—yet as balmy and kind and gentle as the Indian summer sunshine. He combines in an uncommon way the wild and the tame, the primitive and the modern, the uncultivated and the cultivated. He is a tamed cowboy, a civilized savage, a thoroughly uneducated educated man. One may truthfully say of him as was said of Walt Whitman, whom he brings to mind so far as an artist may recall a poet. "There goes a man." He is a thoroughly natural man, the kind that nature delights to claim, and which he loves as a child his mother. He is an artist because he is a naturalist, and naturalist because he is an artist, and poet because he is both.

Others have sought him as an artist, for his fame is world-wide and has been exploited by many newspapers and magazines, but I accept his own advice as printed on the ArcAdiA Page of this number of THE GUIDE TO NATURE, and do not attempt to describe him as an entity, but have selected one detail that, if it were his only good quality, would endear him to our readers; he loves the rocks and ridges and the roughness of untamed nature. He sees beauty in the details of a flower, but his mind and heart and brush work better and do better work among the picturesque and the sublime things of nature.

H. W. Stokes in "The New York **Tribune**" recently says of him:

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REMARKABLE HISTORY OF THE PALISADES PAINTER.

"Years of poverty and privation have been undergone by this artist in order to follow his calling. He was born in Kansas forty-five years ago and when a young man learned the trade of plastering, by which he supported himself for some years until he went to Texas and became a cowboy. His ambition to become a painter was crystallized in a somewhat curious manner. He saw a cheap lithograph in the window of a furniture store in Dallas, a painting of the sort that is cut off by the yard, as you want it, but that had in it something that approached a hint of sky and a shadow of a mountain. Poor as it was, there was something about it that moved the future artist into action; it was the last touch to the lever that sent him headlong into the struggles of an artistic career. He was industriously punch-



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PUTTING ON THE FINISHING TOUCHES.

ing cows in the Texas panhandle in that period and making sketches on the side when not otherwise employed. An acquaintance told him of Cooper Institute, in New York City, where instruction was to be had for nothing. He wrote to the institute and received a reply that he would be admitted as a student if he so desired, being told to report for work on the 8th of October.

THE LONG, HARD ROAD THAT LED TO NEW YORK.

"He had no money to get to New York, and he left the ranch where he had been working with something less than $3 in his pocket. Cowboys are paid about every six months in that part of the country, and, though a considerable sum was due him, he sold out his claim to the best bidder. With the



MR. PERRINE EXPLAINS HIS CONCEPTION OF ART TO A VISITOR.




MR. PERRINE AT HIS TEMPORARY HOME, "DEEP GLEN," HIGH RIDGE.

$3 he had a suit of good clothes and a six-shooter. He beat his way to Galveston by the boxcar route and was delayed by being thrown bodily into the desert by a train crew.

"On reaching Galveston he secured the job of helping the steward on one of the New York boats. He made an acquaintance on board who told him a hard luck story, and on the boat's arrival asked for the loan of his good suit of clothes while he paid a visit to his family. Perrine lent him the suit and the man disappeared. The artist was left in New York City with a pair of overalls, a tattered coat and a six-shooter.



MR. PERRINE'S SON.
Photograph by Professor John J. Schoonhoven, Brooklyn, New York.

"He raised $1.50 by pawning the revolver and secured a job as a plasterer. A strike was in progress at the time and his duty was to keep strikers from entering the building where he was employed. He had to stand in a doorway and dodge the bricks and stones that the strikers threw at him. Until his first week was finished he had to live on his $1.50 and sleep where he could. Empty wagons were a convenient refuge and sometimes he found straw in a hospitable stable.

AT COOPER INSTITUTE—A TARGET FOR STUDENTS.

"On October 8 he appeared at the Cooper Institute, lean as a rail, wearing a Texas hat and with long hair falling over his shoulders. He created a sensation at his first lesson and was the target for the gibes of his fellow students. They did not gibe him long, however, for his cowboy training showed itself.

"Discouragements followed thick and fast. Mr. Perrine and the school had divergent ideas upon what was vital for an artist. He decided to join a second school, where he found himself almost equally restricted. He then decided to leave school and to continue his work by himself, and it was on a chance excursion that he drifted to the

Palisades, where he has remained for the past fifteen years. He was so struck with the beauty of these tremendous cliffs that overhang New York that he decided to remain in the closest association with them. He discovered a tiny building that at one time served as a combination chapel and school house for a primitive little community that has formed a curious eddy in the advance of the metropolis, and through the good offices of the Palisade Commissioner he had it fitted up as a dwelling that has been so attractive to the eye of the passer-by that it has already been written about



A SPECIMEN OF MR. PERRINE'S ARTISTIC WORK.
He expresses and inspires emotion, and makes but little attempt at details of scenery.

and photographed. The upper story of this building gave the artist his studio. The lower furnished him with his living quarters. In the furniture of his house he kept for a time the pulpit and some of the old pews. The dwelling and its surroundings proved to be suitable and decidedly attractive.

A Form of Art That Seemed Revolutionary.

"It was a form of art that seemed so revolutionary that for a long time it won few supporters. Now, however, and particularly when compared with the work of the cubists and futurists, it seems far from radical. And the fact that it is excellent is granted by the foremost critics and dealers in the country. Richard Watson Gilder, who up to the time of his death was an ardent friend of the artist, declared that Perrine was "the most original figure in American landscape art today." A certain dealer in this city, whose name cannot be mentioned for obvious reasons, declares that he is a genius fifty years ahead of his time. "His own generation may not recognize him," said this man to a friend. "but in future generations it is my firm belief that he will be granted a place among the first"—a remark that was agreed with by a member of the National Academy and a famous artist who said to a friend when looking at some of the Perrine pictures: "Here is the work of the man who is the master of us all."

### The Natural Attractions of High Ridge.

Mr. Perrine is not a man to retrograde. After loving and living with the Palisades for many years, it is a high compliment he pays High Ridge in moving there. So I inquired what he considered the chief attractions or, perhaps I should say, how the well-known attractions chiefly appealed to him. He replied as follows:

"'What is it that attracted me to this place?'"

"It is simple. The hills and stone walls and vines that run over them, the trees whose boughs are harps for the autumn gales—these are all a good excuse for one to break into song if it is in him. But the quality of the song has little to do with the local aspect of the scene. Its life is wholly dependent upon the artist's ability to catch and register the play of elemental forces. He must subject what his eye sees to what his every sense playing upon the emotions tells him. It is not the little cross section of the landscape that arouses one, it is the eternal laws that are shot through every atom of the universe. What has color to do with the landscape? It comes over it and is gone; a sound vibrating from an Aeolian harp. Nature as the eye reports her is wild and chaotic. With her manifold sounds what has she to compare with the symphony orchestra? The use of color as an abstract form of expression has not kept pace with the use of sound. We are still children groping for the keys, our hearts filled with a longing for which we cannot find utterance. It is the old, the eternal urge."

### He Loves the Stormiest and Wildest.

Perrine remained upon the cliffs, to live with them and to study as no other man has studied them, in all their moods, the stormiest and wildest of these being meat and drink to him. For the savage which lurks in the breast of every man is strongly marked in the nature of this most representative painter of the Palisades. He lives a lonely life in a little chalet half-way down the steep and rugged old ferry road that runs from Englewood Cliffs to the river margin opposite Spuyten Duyvil. There are two large rooms in the house—one on the first floor and the other on the slope-ceiled upper story. In the wide-windowed upper room Perrine works. It was here that he painted that striking Palisades Cliff scene which hangs in the White House, the notable rock piece "Getting Firewood" owned by the New Gallery, together with many other pictures, among them "The Robbers," owned by the Carnegie Institute. It was here that the late Richard Watson Gilder and other writers have come to visit him and hear him talk in his ecstatic way about the Palisades.

When the cold winds have stripped bare the trees and the faces of the crags peer out in the thin winter sunlight, that is when Perrine does most of his work. He loves to paint the black clouds that lower above the cliffs, and nothing suits him better than a great storm, when the pines and cedars are bending like tortured wraiths before the wind. With Perrine, as with all true artists, painting is worship. He speaks with the reverence of the ascetic of the wonderful work of Nature in and about his airy demesne.—Bailey Milliard in "The Bookman."

### Volcanic Ashes Damage Marine Vegetation.

The expedition sent by the United States Bureau of Soils to study the seaweeds of the Alaskan coast as a possible source of potash, reports serious damage to marine vegetation from the eruption of the volcano Katmai, in June of 1912.

In many places, the ash from the eruption covered the sea bottom to a depth of a foot and a half to two feet, and in certain spots even to more than four feet. This layer of loose ash either smothers the sea plants, or covers their anchorage on the firm rocks so that they get no hold on the bottom from which to grow.

In addition, great fields of pumice float on the surface and are carried hither and thither by wind and tide. Some of these fields are a hundred yards across and a foot thick; so that a small vessel can hardly force its way through them, and in places, a man can walk on the surface. As these rafts move about, the floating lumps bruise and grind the seaweeds, until over considerable areas, the rocks are scoured nearly clean.

## The November Woods.

BY HARRY G. HIGBEE, HYDE PARK, MASS.

"November breathes no flattering tale;
The plain truth-teller of the year;
Who wins her heart, and he alone,
Knows she has sweetness all her own."

The poet here pays loving tribute to the month which most of us are inclined to regard as the least interesting of the twelve. Nature is lavish in September and October, when she spreads the glory of her harvest over the hills, and winter has its charm of out-door sports as the crystaline purity of the snow makes all things beautiful, but we are inclined to look upon November as a time between seasons—of bare trees and howling winds;—when there is little of interest out of doors.



"WE NEED NOT NOW BE CONFINED TO PATHS OR TRAILS."

Let us take a ramble and see what we can find. We should not be afraid of the weather,—there are chill winds and storms, of course, but what month does not have its disadvantages? November gives us some delightful days as well, and but few when we cannot wander afield if properly clad. From afar the woods appear bare and uninteresting. The casual observer would not expect to see flowers, fruits and green ferns at this season, yet such may be found. Many birds, recently arrived to spend the winter months,—with several other species which are permanent residents,—may also be observed and studied to much better advantage just now, than earlier when the trees are in foliage, or later when snow covers the ground and we cannot move about so easily. Among these are the juncos, kinglets, brown creepers and tree sparrows; all of which help to enliven the November woods.

How crisp and invigorating is the air on a clear November day,—and you need not be clad so heavily but that walking is a real enjoyment. As you enter the woods you are surprised to find how different they seem if you have not been accustomed to them at this season of the year. We can now see long distances ahead and the peculiarities of the various trees and shrubs are brought closely to our attention, giving us excellent opportunities for their comparison and study. If we depend upon the leaves and flow-

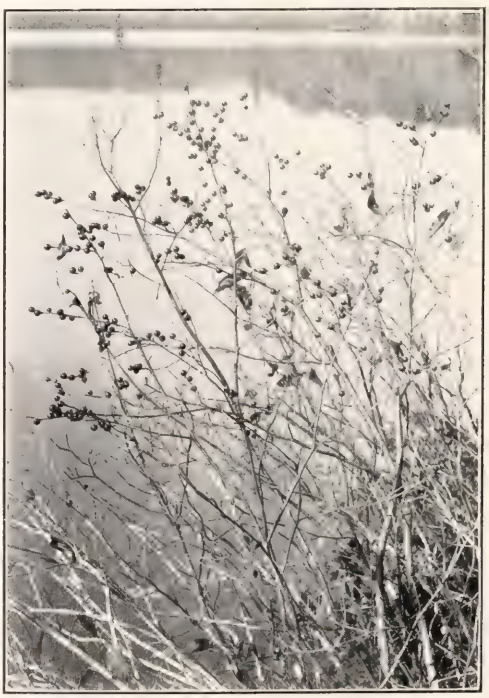


THE YELLOW, STAR-SHAPED FLOWERS OF THE WITCH-HAZEL.

ers alone for such study we lose much of the true character of the plants, for we find many of them most interesting in their winter forms, and attractive in their fruits.

We need not now be confined to paths and trails; in fact many of them are almost obliterated by the fallen leaves, and we are invited to wander where our inclination leads us. Along the margins of the meadow and edges of the swamp the black alder, or "winterberry" brightens up the landscape with great masses of scarlet berries —some of these shrubs still retaining their green leaves, which form an attractive setting for the fruit. Beside the trails through the woods we find scattered here and there another shrub with similar berries,—even more beautiful, though not so numerous. They are oblong in shape, of a deeper scarlet and glossy surface, and are the fruit of the spice bush, which we know so well in the spring as one of the first shrubs to bloom in the woods,—throwing forth its greenish-yellow blossoms before the leaves appear, and when only the pussy-willows and alder catkins have given us warning of the approach of spring. Now it takes on a new interest.

Perhaps the favorite shrub, or at least the most distinctive of the November woods, is the witch hazel, now just in its prime. It seems to be everywhere, and though it would be quite obscure were it not in bloom, it now lights up the thickets and pathways by the abundance of its yellow, star-shaped flowers,—scraggly and not beautiful as individual blooms, but adding greatly to the life and beauty of the landscape by its welcome presence. Like the spice bush, it blooms when



"ALONG THE EDGES OF THE SWAMP THE BLACK ALDER BRIGHTENS UP THE LANDSCAPE WITH GREAT MASSES OF SCARLET BERRIES."



THE SYCAMORES NOW PRESENT AN INDIVIDUALITY NOT NOTED AT OTHER SEASONS.

not in leaf, and coming as it does when most of the other blooms have gone, gives us the more reason to delight in it. We must see it this month to appreciate it, as it will not last long, and when the winter snows cover the ground the witch hazel sheds its bloom and again becomes as inconspicuous as its companions.

A few bright-colored leaves still linger on the low bush blueberry, though most of the shrubs have lost their foliage and the ferns and brakes are brown and sere. Coming, however, to the rocky hillside sloping down to the swamp we find great clumps of the polypody or rock fern. This is perhaps our hardiest fern and remains green and attractive throughout the winter. Many of the marginal shield ferns scattered about among the polypodys are also still green and fresh looking, and make such attractive settings and groups,—surrounded by green mosses of several varieties,—that one might well imagine it to be the beginning instead of the end of the growing season. Nearby in the swamp may also be found the Christmas fern —a similarly hardy variety whose long, erect fronds present some splendid groups. Later in the season this fern is inclined to lie prostrate upon the ground, although it continues green and well preserved through the winter months. Mosses and lichens may be found in abundance on the rocks and trees, and this is a good season to study them. They present some truly beautiful aspects when examined under a microscope,—or even a pocket magnifying glass,—and are well worthy of a closer study.

It is of interest to note how the different trees and shrubs spend the winter too. The white pine—our noblest forest tree—preserves its dignity at all seasons, but is perhaps especially noticeable now, having spread at its feet a thick, soft carpeting of its own making, and we cannot help noticing the invigorating fragrance as we pass through the grove. The gray beech and the white oak still retain their leaves, holding them,—especially many



"CLUMPS OF BARBERRY MAKE PICTURESQUE THE BORDERS OF THE OLD PASTURES."



"WE FIND EVEN THE DRIED GRASSES AND WEEDS INTERESTING."

of the oaks,—until the new leaf developing in the spring pushes off the old one from the twig. We note now the curiously dotted bark of the speckled alder which lines the banks of the streams and borders of the swamps. While this shrub was in foliage it was not so conspicuous. The new leaf buds show prominently and the rosy-pink catkins at the ends of the twigs are already nearly two inches long,—seemingly so far advanced as to be injured by the cold and frosts; but Nature knows best, and how carefully is each prepared for its period of rest. The thick layers of pine needles and dead leaves not only protect the roots of the plants, but in the wondrous process of disintegration afterward become absorbed into the ground as nourishment for the new growth. New leaf buds on many of the shrubs are quite apparent, remaining thus through the winter, ready to burst open with the first warm breath of spring. The silvery catkins of the hazel-nut, though not as long as those of the alders, are never-theless quite prominent, and the large, aromatic buds of the balm of Gilead trees along the roadside become very conspicuous after the leaves have fallen.

Yonder is a tupelo, with its queer flattened top made the more impressive by the absence of leaves on its stiff, horizontal branches. One of these trees noted at this season is not easily forgotten and never becomes confused with other species. The sycamores now present an individuality not noted at other seasons, the loose, gray outer bark which is shed annually having mostly fallen, and the smooth, new growth of creamy-white bark is very beautiful. Some of them are mottled with patches of the old bark and they have a strange, almost spectral appearance, standing with their scraggly, outstretched branches in the midst of a swamp,—the queer, globular seeds rattling in the breeze. The white birches seem even more attractive in the winter landscape than when they are in foliage, and clustered in groups in the swamps or by the roadsides, the quantities of their tiny, winged seeds provide food for the flocks of goldfinches and other seed-loving birds which gather to enjoy them.

Clumps of barberry make picturesque the borders of the old pastures with their red, dangling clusters of fruit,—even though a bit dried by the frost,—still clinging to the drooping branches. The red cedars in the pasture are full of fruit, too, and their blue, conical berries provide food for the robins—many of which now spend the winter season with us. Both song sparrows and flickers are also apparently becoming more common through the winter in favorable localities. The former are sometimes heard singing in the swamps on a mild November day, while the flickers may frequently be started up from their feeding as we cross the fields or pastures.

We find the maple-leaved viburnums

scattered all along the hillsides in the open woodland, and underneath, the waxy, berry-like fruit of the false solomon seal and spikenard still persist. The abundant, purple fruit of the viburnums appears like great clusters of blueberries dangling from the ends of the branches, and some of the purplish-crimson leaves still cling to the twigs, even after repeated frosts. I was surprised to find a gray squirrel gathering and eating these berries the other day, and upon tasting them, I found they were full of seeds and a bit puckery, but not bad.

In the pine woods the trailing partridge vines are laden with their bright red, berry-like drupes, upon which the bobwhites and grouse are said to feed, and here if it be a bright day and not too cold we should not be surprised to see a butterfly or two, or to hear an occasional hyla or spring peeper—perhaps better known as tree frog. The mourning-cloak and the comma are two of our hardiest butterflies, hibernating in the winged stage under stones and logs, and are occasionally met hovering about a sunny spot in the open woods even while there are patches of snow on the ground. Both the red and gray squirrels are abroad at this season, and having completed the gathering of their winter stores, are now at liberty to enjoy the freedom of the woods. On sunny days the cheery whistle of a chipmunk may also be heard, or you may catch a glimpse of him scampering over the rocks, though doubtless he has already prepared his soft nest beneath the wall, where he is soon to retire for his hibernating sleep.

We find even the dried grasses and weeds interesting before they have been destroyed by the winter storms, and many of the flowers which have gone to seed are exquisitely beautiful when closely examined and studied in their natural surroundings. We pass through large beds of asters and goldenrod, which, though having gone to seed, still retain their perfect form and in a remarkable degree resemble flowers in bloom. Very attractive, too, is a picturesque bed of dried grasses with long stems and wavy, plume-like tips. Bleached nearly white it seems almost to sparkle as it waves in the breeze and the sunlight falls full upon it.

A dense massing of smooth sumac along the hillside attracts us with its



"LARGE BEDS OF ASTERS . . . THOUGH HAVING GONE TO SEED STILL RETAIN THEIR PERFECT FORM."



"WE FIND PATCHES OF SWEET BAY ABUNDANTLY LADEN WITH THEIR BLUISH-WHITE WAXY FRUIT."

large, pointed, upright clusters of deep crimson fruit. We find compact, bright scarlet fruit-heads among the withered ferns and plants of the swamp, and find it difficult to reconcile them with the modesty of the jack-in-the-pulpit, but such they prove to be. Quite different is the fruit of the clintonia nearby, which is a berry-like cluster of a deep bluish-black. Along the waste places, among the sweet fern and other low shrubbery, we find patches of sweet bay abundantly laden with their bluish-white, waxy fruit. The sweet-scented leaves have mostly fallen but the peculiar fragrance seems to have been transmitted to the small berries which have gathered in thick clusters about the main stems and branches, and from which the wax is obtained for making the much sought "bayberry candles" for the Christmas trade.

Now is the time to gather the trailing evergreen which we use for holiday decorations, for though it is green throughout the winter it is more readily gathered before the frost has thickened among the leaves and the ground has become thoroughly frozen. It is still in bloom, and its curious spiked heads of a yellowish hue are filled with pollen. Growing with this is the ground pine, a similar trailing plant but of a more upright growth of minature tree-like form, which is also in bloom.

Chickweed, fall dandelion and yarrow are all blooming,—though not plentifully,—in their favorite haunts, and we may still find many golden heads of the sweet-scented tansy along the embankments. Large, spiked racemes of deep purplish fruit, flattened at the ends prove to be pokeweed. They were hardly noticeable until the tall, rank-growing weeds were withered by the frost, but now offer a conspicuous banquet to the robins and flickers.

The hanging, cup-shaped nests of the vireos and the hollows of the woodpeckers and chickadees are now in plain sight and we wonder that we



"THE ENTIRE POD BECOMES TRANSFORMED INTO A MASS OF FLUFFY, SILKEN WHITENESS."

could have passed them by so many times during the season without noticing them.

The dissemination of seeds by the various plants is most remarkable, and we now find opportunity for a close inspection of several of them. The curiously-constructed pods of the milkweed are just bursting open, disclosing a compact array of flattened, roundish seeds, each with a tuft of white, silky hairs an inch or more in length attached to its smaller end. They open rapidly in the sunshine and almost before we realize what is happening the entire pod becomes transformed into a mass of fluffy, silken whiteness, waving in the breeze. There seem to be hundreds of the seeds in a single pod, and each one now assumes a globular shape as the many hairs open out, forming a most excellent support for the brown seed in the center, as one by one they are carried away by the wind. They are exquisite little airships, and what a delight to watch them float along—some going but a few yards to be caught on other weeds, others mounting up, up, till they are beyond the tree-tops and are carried many hundreds of feet before descending to find a bed among the leaves, to await the coming of the spring for their transformation. The cat-tails, too, are scattering their seeds to the winds, and a bed of them at this season looks odd enough with the hitherto stiff, brown blossom-heads now bursting open into a feathery mass, and each one furnishing literally thousands of the tiny seed parachutes. As we toss a handful into the air it is like a veritable snowstorm and we wonder what becomes of them all.



"NOW IS THE TIME TO GATHER THE TRAILING EVERGREEN."
Ground pine and two varieties of club moss.

We have but to examine our coats to find that we too have been unconsciously aiding in this wonderful seed distribution, and have been transporting some of the tiny, feathered aster seeds, or the more persistent pronged seeds of the begger ticks and burdock, —and if we wish to witness a genuine bombardment, let us gather some of last year's nuts of the witch hazel and take them home. At the proper time when they are sufficiently dried and ripe, there will be a sudden explosion, and the seeds within will be hurled for several yards across the room.

These and other things of interest may we find if we search the Novem-



"THE CAT-TAILS, TOO, ARE SCATTERING THEIR SEEDS TO THE WINDS."

ber woods—and even the bare trees, have they not still a message for us? They seem as distinctly characteristic now as when they were in foliage, and what is finer than a sunset seen through their scraggly branches? The beautiful tints and colorings of the November sky cannot be surpassed, and to fully appreciate it we must linger a bit on the hillside, until the delicate tracery of twigs and branches against the brilliant background of gold fades gradually and almost imperceptibly into the purple twilight. Nature smiles as she relapses into her long winter's sleep.



"THE DELICATE TRACERY OF TWIGS AND BRANCHES AGAINST THE BRILLIANT BACKGROUND."

### Through the Fields in November.

BY CHARLES A. DANN, KINGSBRIDGE, N. Y.

Since I must go today well into the outskirts of Greenwich, I will follow, with eager choice, a by-path through the fields. The perfection of the afternoon, and the enticements of nature combine to make this half mile easily the most interesting of the day.

There is evidence on all sides of silent preparation for winter. The only sign that seems to belie this is the carpet of green grass underfoot, where the frosts have not yet issued their edict of repose. Scattered thickly in this covering of green are hundreds of newly opened dandelions, too hardy for winter's skirmish attacks. The deep red decorations on the tops of the leafless sumachs resemble blossoms, but inspection shows that they are the completed fruitage of the long summer. The season of blossoms is over. The day-flowers and the dandelions merely help to emphasize nature's law of rest.

Most of the trees are entirely bare of leaves. Some of the elms seem to have taken special care to unburden every smallest twig. The ailanthus appears to have renounced its twigs with the leaves, so that the younger trees stand branchless, bearing great scars where the leaves have dropped away. A part of the oaks have been equally careful to unburden for the winter, while the rest have chosen to keep a part of their foliage, where, withered and brown, and useless, it will rattle in the gales of winter until jolted away by the swelling buds of spring. Many of the younger trees by the side of the path, the apple and the cherry in particular, still bear a hardy growth of green leaves on the tips of the branches. This is doubtless due to youthful lack of experience with the all-conquering winter.

Even with the handicap of the rustling leaves underfoot, one could expect, upon most days in November, to see or hear a dozen kinds of birds. This day is surely an exception, for with the best attempts, I can locate but three kinds. This dearth cannot be the fault of the day, for conditions are ideal. Nor can it be due entirely to the dullness of these eyes and ears, for it has been their diversion, for many seasons, to wait for these sights and sounds. Lack of time perchance, is the chief difficulty for living nature is enticed only by lingering. The three detected are the chickadee, calling softly from some perch overhead; the nuthatches, harshly protesting, in their busy rounds, at the rustling of the leaves, and the juncos, active all along the path.

To atone for the lack of birds perchance, one lone hyla astonishes me as I return past the swamp, at dusk, by calling out cheerfully with the voice of spring. He must know what he is about, at least I will try to take his optimism back to the noise and the pavements.

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### Outdoors Better Than Indoors.

BY SARA H. V. PRUESER, DEFIANCE, OHIO.

As my eyes rest on the various tints and shades so harmoniously blended in the growing leaves that form the walls of the woodland temple above which the blue sky forms an airy canopy, the walls of the place that we call home seem hard and coarse. No atmosphere to soften the hardness, no fine lacework of branches and leaves to make you wonder what they conceal, no hidden places to arouse your interest in the unknown. Much of the decoration within our homes is bold and barbarous and bad. But the awakening is at hand. Already the best decorators and artists are introducing natural effects into their art. The New York Grand Central Railroad Terminal has a starlit sky for its roof. Art will some day evolve a process by which the place we call home may be transformed into a veritable bit of out-of-doors.

When we come into a realization of the fact that no rug from the Orient, be it ever so elegant, can compare with the grassy carpet of wood or field or a woodland pasture luxuriant with the blossoms of springtime or with the ripened leaves of an autumn day, and that no wall tapestry however expensive can approach the beauty of the foliaged trees and shrubs, then we shall come into a right appreciation of nature and natural effects. When we come to know how perfectly sane and pure nature is in all her moods, we shall stand appalled at our own baseness and at the distorted notions that we have acquired of what we believe to be right living.




CEDAR WAXWING.

**Birds and the Mountain Ash.**

The red berries of the mountain ash are a favorite food with most of our small tree feeding winter birds. When someone reports a January robin or waxwing or the more usual pine siskin, goldfinch, crossbill or grosbeak look to the mountain ash tree in your own yard or your neighbor's.

For several years flocks of twenty, to fifty or more purple finches spent each winter in our town. A dozen or so scattered mountain ash trees, one here and one there in some person's front yard, supported them. Only occasionally could some of the birds be found varying their diet with sumach berries or such shriveled apples as had remained on the trees. They were very tame, often feeding undisturbed on a branch fifteen feet over the sidewalk on which persons were passing; and this notwithstanding they were continually hunted by boys with slingshots who killed many of them each winter. These flocks were often joined by pine siskins and goldfinches.

One winter there appeared in these mountain ash trees a flock of strange birds about the size of robins. No one in town, not even the oldest inhabitant, had ever before seen their like. A few were shot and taken for identification to the local taxidermist who was considered infallible in all such matters. He declared the birds to be "Arctic grosbeaks"; then the newspaper came out with a detailed account under that head. I caught a beautiful male which had been wounded in one wing, probably by a sling-shot. He soon became quite tame. Apple seeds were his special delight, and if actions speak louder than words no small boy ever said, "Save me the core" more plainly than he. Somehow the wing, which had seemed broken, healed of itself after my efforts to bind it up had failed. Early in the spring I let him go; for a while he perched on my hand, then flew to an apple tree and soon to the top of a tall maple where I finally left him calling as if for his comrades whom no doubt he found in the piney forests of the north to which they had gone before winter had broken up. It was not until years later, when I had learned a little about birds in general, that I knew the correct name of those winter visitors; they were pine grosbeaks.

When, in winter, you see birds which suggest robins, but with short, thick bills, in a mountain ash tree, pine grosbeaks will be a pretty sure guess. If, on investigation, it prove wrong then there must have been a decided mistake indeed. The males of the American and red-breasted crossbills and purple finch are the only other red-breasted birds at all likely at the time, and the three are of sparrow-like size;

it should be added that the color in all is a real red, too,—not russet or rufous, as in the robin.

Doubtless the most welcome bird in winter, whenever he sees fit to stay with us so late, is the robin. I have seen him in mid-winter apparently quite at home and comfortable in a mountain ash tree of a village on the bleak shores of Lake Michigan.

Like the robin, the cedar waxwing is not a regular winter bird; but when he does remain through a northern winter it is in company with a dozen or more of his fellows, and it is a good sign that there is no lack of mountain ash berries. With his jaunty crest and yellow-tipped tail (the red "wax" on the wings is inconspicuous), he is perhaps the most picturesque bird to be found in the winter mountain ash.

Pine siskins and goldfinches, the latter now in their dull post-nuptial plumage, doubtless attract the least attention of all these winter birds, yet none occur more regularly than they. Both species are small, and about the same size, the siskin grayish, the goldfinch buffy; in flight the former displays bright yellow on the wings and base of the tail. Though these birds often come into town, where they frequent and feed on the mountain ash, they are still more at home in the woods, their favorite food here being seeds of the black birch; often, too, they are to be met in neglected fields and along weedy road-sides, goldenrod and many other plants contributing to their diet of seeds. In feeding from a branch or spray they are as apt as not to hang back downward; but it must not be thought that habit alone will serve to identify them. It is practiced by all or most of the smaller tree-feeding birds to some extent, and is in fact more a trait of titmice than of sparrows. It is to the latter family that siskins, goldfinches, cross-bills and grosbeaks belong.

E. J. Sawyer.



GOLDFINCH IN WINTER PLUMAGE.



PINE GROSBEAK.

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**To a Nighthawk.**

Strange twilight bird that comes when purple shadows
Are gathering from the hilltops far away,
Descending silent, save the long-drawn, muffled whirring
As thy swift wings denote an instant's stay.

How far thou art above us, there's no telling;
Dark is thy breast, the color of the sky.
Whence did'st thou learn those grateful curves majestic,
That mark thy path across the roseate sky?

But see! The morning sun streams forth in splendor;
Thou, too, hath rested through the stilly night.
Back to thy waiting field-nest rude, till evening
Bids thee wander on thy food-quest flight.

—Edith P. Hathaway.

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In "Bird-Lore" for October, William P. Wharton describes a visit to the estate of Baron von Berlepsch at Seebach, Germany, where the surprisingly successful methods in increasing the bird population have made von Berlepsch's name widely known. Louis Agassiz Fuertes continues his illustrated serial on the 'Voices of Tropical Birds;' Wells W. Cooke and Frank M. Chapman write on North American Sparrows; and there are numbers of notes from bird-students, and news of the activities of the Audubon Society.

# ORNITHOLOGY

## The Alaskan Blue Grouse.

BY C. L. ANDREWS, SEATTLE, WASHINGTON.

A beautiful bird, that the early settlers on the Pacific Coast know as the blue grouse, is found along the coast of Alaska. Under different names, as climatic and other conditions vary, the bird is known from northern California to Alaska. Those who have known it in the woods from the Blue Mountains of eastern Oregon to the St. Elias Alps of Alaska for the past fifty years speak of it as the blue grouse.

It is the size of an average barnyard hen, and of a dark bluish color, varying from almost black to a bluish brown according to the time of year and the nature of the surroundings. A band of lighter blue with a black border is at the end of the tail. The male has on each side of his neck a pouch or gland that he inflates when he sounds his peculiar note in the mating season. These pouches are bare, and in the spring are bright yellow or orange.

The birds were formerly plentiful in the foothills of the Willamette Valley in Oregon. Forty years ago the boys of the early pioneers hunted them with the muzzle loading rifles that their fathers had brought across the plains, but the increase in population, the use of improved weapons, and of the trained dogs that came later, have almost swept the splendid birds from the wooded hills of the Willamette. In the Coast range, in the Cascade mountains, and in the Blue mountains of Oregon, they still live. In the state of Washington they are to be found in the Cascade mountains, in the Olympics and in the deep woods of the western part of the state. In Alaska they occupy the land between the coast and the higher Alps where the ptarmigan dwell.

In the mountain gorges where the spruce and the hemlock grow on the mountainside next the ocean, beginning in April, may be heard the deep booming of the bird's love note made when he begins to look for his mate. The first "hooters" begin on the south side of the mountains, near the upper limit of the evergreen timber. In the scrubby pines, or on the edge of a ledge of moss-covered rock, they will sit every day and send throughout the valley the deep mellow sound that is at once a challenge to their rivals and a



THE ALASKAN BLUE GROUSE.

love call. The bird ruffles his feathers much as a turkey does in strutting, fills the neck pouches with air, lowers his head and utters in rapid succession a series of loud hoots or grunts that under favorable circumstances may be heard for a distance of from two to three miles. When the bird is "hooting" he seems to be oblivious to sound or movement. He may be approached in almost plain sight at the time, to within a few feet, provided the observer is silent and motionless between the notes. The sounds are strongest and loudest at first, descending in volume and increasing in speed to the last. They are generally six in number. The bird seems to have a ventriloquial power, when he discovers an onlooker. I have searched for an hour for one that was perched on a fir at a distance of fifty or one hundred feet from the ground. At first the sound came steadily from a clump of closely woven branches, and I seemed to locate it to within a few feet. As I circled around to get a new view the sound would suddenly seem to come from another spot, perhaps from another tree. Then I knew that he knew that I was looking for him. I have worked around and around the tree to be compelled at last to leave without a sight of the bird.

The young are hatched about the first of June. At that time they are low in the valleys among the thick alders and berry patches. As the season progresses they go higher on the mountains. About August they will be found near the timber line and in the hanging valleys between the higher peaks. There they feed on the berries until the encroaching snows cover the ridges. Then they retire to the heavy evergreen timber and wait for spring.

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### The Humming Bird's Nest.

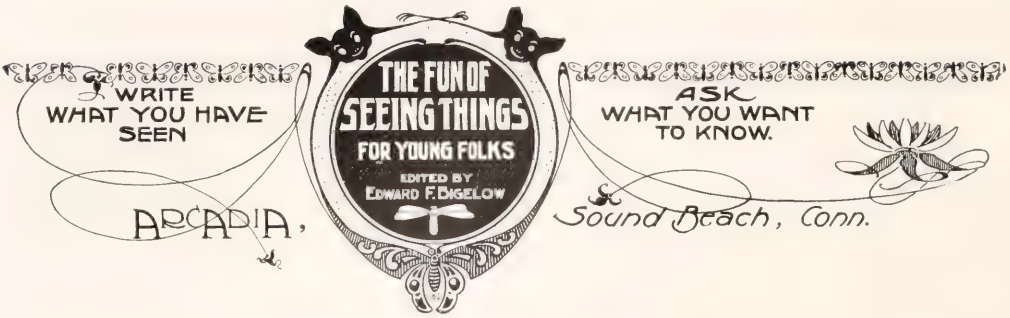
BY W. BUSH, REDLANDS, CALIFORNIA.

The humming birds of California, the land of flowers, fruits and birds, build their tiny nests in all kinds of places—on the topmost branches of the Eucalyptus one hundred feet or more from the ground, where, with a good glass, you can see them swaying back and forth in the wind; or in the vines that climb over the porch; or on the open branches of a low tree, plainly in sight when you find them and yet, on account of the "law of protective coloration," so disguised that you may easily pass within a few feet and not notice the beautiful little object that is so cunningly glued and woven perhaps to a single twig. The nest in the illustration is located in this way on a small three-year-old plum tree. It is about four feet from the ground, a beautiful little cup made of



NEST AND YOUNG OF HUMMING BIRD.

moss and material like cobweb interlaced and woven together in exquisite fashion. The bark of the tree, the material of which the nest is made and the young birds are each greyish in color and so much alike in appearance as to be almost indistinguishable to the casual observer, but upon going a little too close you may suddenly hear a sharp whirring noise and, as you pause in wonder, you will see directly in front and but a few feet distant, a bright little object with bronze plumage and flaming breast, the piercing eyes flashing as the bird darts backward and forward, the little gossamer wings quivering and vibrating so rapidly as to make them appear almost stationary. You are trespassing and the mother humming bird is expressing her indignation. The nest, a work of art, is about one and one-half inches in diameter. The two young birds are almost ready to fly. They completely fill the nest as they snuggle down, with their eyes closed as if asleep and their two little bills sticking up like a jack-in-the-box.




## A Good Study of a Robin Feeding Young.

Portland, Maine.

To the Editor:

The accompanying photograph of a robin feeding her young is one picture from a series which I obtained last June to illustrate the bird's home life.

The nest, which was one of the largest robin's nests that I have ever seen, was placed on the first limb of a small elm tree, directly against the trunk and eight feet from the ground.

Placing my camera on the top of an eight-foot stepladder, I carefully focused on the nest, attached a fifty-foot tubing to the shutter and, concealing myself among some alder bushes, waited. The bird soon returned with a worm, and while she was engaged in feeding the young I secured the study here given.



A MOTHER ROBIN AND YOUNG.

EDWIN L. JACK.

## Very Long, Slender Worms.

Sound Beach, Connecticut.

To the Editor:

As my little friend and I were playing by the brook, we saw what looked like a slender blade of yellow grass, but upon looking more closely we saw a worm swimming in the water.

It was so interesting that we got a glass and put a few in it and to our surprise they knotted themselves all up. We brought some down to you, and it was a hard piece of work getting them unknotted.

Sincerely,
HAPPY POTTER.

Horsehairs do not "turn into" worms. In fact no form of life comes from a dead thing. A horsehair separated from a horse is a dead thing. No form of life "turns into" something else, but each form of life takes its own course, though often through varied forms and many different situations. In this respect even human life is no exception.

Separately in water these worms look, as you say, like very slender filaments of grass, but together they give the suggestion of a mass of horsehairs.

Professor H. W. Conn, of Wesleyan University, Middletown, Connecticut, writes:

"They come from eggs of other worms of like type with themselves. They pass their early stage in the body of some insect, and there grow to a large size, indeed, reaching a practical adult size, stored away inside the insect's body. Sometimes they are so large as to completely fill up the abdomen of the animal. Then they take occasion, when the insect in question is near a body of water, to emerge from the abdomen of the insect and assume a free life. Sometimes they accumulate in enormous quantities, hundreds of thousands of them being found together in certain ponds and pools under some circumstances. They then

mass themselves together so that they really look like massed up horsehair. The popular myth that they come from horsehairs is not only untrue but utterly impossible. These are well-known animals of a definite species, coming from eggs with a definitely known history."

P. S. These animals pass their larval history in two different hosts, and the one in which the more common one passes its life immediately preceding its free life in the water is not a grasshopper, but a beetle. Sometimes they are eight or ten inches long* when they first emerge from the abdomen of the beetle.

I think your letter is a proper answer to the matter, and it is certain that these hairworms come from the abdomen of insects, usually beetles,

*One of the worms pictured measures a little over eleven inches in length.



A REMARKABLE MASS OF HAIR-LIKE AQUATIC WORMS FOUND BY HAPPY POTTER A YOUNG NATURALIST OF SOUND BEACH, CONNECTICUT.
Magnified about six diameters.

and sometimes in great numbers, for instances have been seen where beetles in enormous numbers visit a body of water at the same time, so that the hairworms have an opportunity of emerging in great numbers at once. —H. W. C.

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### The Split Rock.

Wilton, Connecticut.

To the Editor:

I send with this the picture of "Split Rock" which is situated in Wilton a mile or more north of Cannon Station.



THE SPLIT ROCK.
A lady has observed this rock for fifty or fifty-five years.

A lady who has known the rock from her childhood tells me that fifty or fifty-five years ago the split was only about six inches wide. When this picture was taken last October I estimated, by stretching out my arms, that four feet from the ground the two sides were about four feet apart. The tree that grows between the sides is six or seven inches in diameter near the ground.

The rock is granitic, but the particles are so coarse that the water must penetrate between them. Great blocks that have broken off lie around the base.

Yours very truly,
ANNA E. CARPENTER.

### Bettie Eustis.

BY ARTHUR MUNSON, EUSTIS, FLORIDA.

The writer has so much comfort and pleasure in his pretty pet bird, Bettie Eustis, and her four charming young birds that he wishes briefly to state his case to the nature loving readers of this good outdoor journal.

Bettie locally called a "blue peet" but judging from what Dr. Bigelow writes to me she is a gallinule, one of the fisher birds that abound on the lakes in Lake County and other parts of Florida.

It is Bettie's colors and charming ways that are worth noting. On her back and neck she has lovely blending of purple, blue and green that in sunlight is magnificent. On the top of her trim little head is a nearly oval patch of sky blue; around her bill, which is rather short for a wading bird, is a band of scarlet more than a half-inch wide. Her bill and legs are greenish yellow. The tail is short and pointing up, with a frequent flipping or jerking motion.

The young are jet black when hatched, and are as "cute" as any baby fowls you ever saw and loved.

The adults are about the size of quails, but slimmer. The whole family is on the deck of my studio house boat, and even in the cabin (where they have located the rice bag), at all hours of the day, and will eat from my hand.

Bettie is so maternal in her actions, and so constantly careful of her young that she one day drove away an old crane four times her size when he was wading near the boat and in what she thinks is her own domain.

She hatched six biddies, but lost two that were doubtless caught by one of the alligators that infest Lake Eustis.

As I write this, one of the birds is on my goods-box table picking at a cut lemon, while another is on the deck eating boiled sweet potato. To wheat or corn they prefer rice, cheese, hominy and any scraps of meat that the steward may hand out.

Bettie's call and notes are pleasing, and remind one of those of the common hen; she has a little song with which she often favors me. The chicks have a pleasant chirp, especially when I speak to them. They cut up great

antics on deck, after they have fed, jumping, flapping their wings and chirping. One "turns halfway around while up, and alights pointing sou-by-sou-east." By stepping lively they can run on the leaves of the pond lilies that grow here abundantly.

The gallinules, although not web-footed, are good swimmers. They have a way of pulling together several stalks of slim, tall grass until, by holding them down with their feet, they have made a platform over the water, on which they stand and dig out snails from their shells. Many a snail the size of a walnut has Bettie brought ashore and picked out for her little brood standing in a circle to secure each his share.

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### Drone Bumblebees.

BY LEE A. DOLLINGER, PRINCIPAL SIDNEY HIGH SCHOOL, SIDNEY, OHIO.

The Hoosier poet has made good use of "poetic license" in "If you don't think they 'll sting you'll see," and "An' he ist run an' pullt out the stinger."

You better not fool with a Bumblebee—
Ef you don't think they can sting—you'll see
They're lazy to look at, an' kindo' go
Buzzin' an' bummin' aroun' so slow,
An' ac' so slouchy an' all faoged out,
Danglin' their legs as they drone about the
Hollyhawks 'at they can't climb in
'Ithout ist a-tumble-un out agin.
Wunst I watched one climb clean 'way
In a jimson-blossom, I did, one day,—
An' I ist grabbed it—an' nen let go—
An' "Ooh-ooh, Honey, I told you so,"
Says the Raggedy Man; an' he ist run
An' pullt out the stinger, an' don't laugh none,
An' says "They has ben folks, I guess,
'At thought I wuz predjudust, more er less,—
Yit I still muntain 'at a Bumblebee
Wears out his welcome too quick fer me."

All bumblebees do not sting for the simple reason that some of them, the drones, have no stingers. In all my experiences of being stung by bumblebees, I have yet for the first time to be fortunate enough to pull out the stinger. The bumblebee does that herself. I say herself because only female bumblebees are provided with stingers. Kipling speaks with truth as far as the bumblebee is concerned, "That the female is the most dangerous of the species."

When the cool nights of September come and the bull thistles are in full bloom on roadsides and in waste places, in all their purplish beauty, and the bright sunshine of the afternoons enlivens insects that have been numbed by cool nights and light frosts, one may find on thistle bloom many bumblebees of various sizes and markings. If he observes closely he will notice that some of them bear distinct markings of black on the abdominal part, possibly a third or a half of the abdomen being black "If you don't think they'll sting," pick one of these up. Other bees have no coloring but yellow on the abdominal part unless it be that the tip is lightly blackish. The abdominal section is also more slender and longer than like parts of the bees bearing distinct black markings. These are drones, or in the language of my boyhood days, "fuzzies.' They may be picked from the thistle bloom with impunity. They can't sting, because they have no stingers. They are the males and their office is to perpetuate the bumblebee race.

I have found them only on thistle bloom and some species of asters. I have also found drones with abdominal parts entirely black, frequenting different varieties of astors, but not thistles.

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### Migration of the Olive-backed Thrush.

In the September 15th issue of "The Oologist" published at Albion, New York, Mr. Paul G. Howes has an interesting article, with illustrations, describing a fall migration of the olive-backed thrush. It is an excellent example of a careful study of nature and of a concise account of that study for the benefit of others.

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The newly completed metal dome resting on walls of reinforced concrete at the National Observatory of Argentina has been struck by lightning. The bolt was a heavy one and blew out all the fuses in the lighting circuits in the neighborhood. But the charge passed away harmlessly by way of the metal beams; so that not only was there not the slightest damage to the structure, but a workman employed within the dome at the time of the stroke was unaware that anything had occurred.

# THE STARRY HEAVENS IN NOVEMBER

## The Starry Heavens in November.

BY PROFESSOR ERIC DOOLITTLE OF THE UNIVERSITY OF CALIFORNIA.

The eastern part of the evening sky now begins to present the brilliant apperance which is characteristic of the winter heavens. Here we see Capella, Taurus, Orion and Gemini, and although these striking groups are still near the ground, it will be but a few short weeks before they will have be seen just above the ground. Then, with Orion shining in the south and Capella almost in the zenith, the eastern heavens will afford a striking contrast to the stars of the west, where many of of the faint constellations of summer will still linger.

### The November Stars.

It is not by any means a difficult matter to soon become familiar with all of the brighter star groups of the




Figure 1. The Heavens at 9 P. M., November 1. (If facing south, hold the map upright. If facing east, hold East below. If facing west, hold West below. If facing north, hold the map inverted.)

mounted well up toward the zenith, shining forth in such splendor that it will attract the attention of even the most indifferent observer. By this time the brilliant Dog Stars will have risen and the beautiful Leo will heavens and this definite acquaintance with the wonderful scene which is every night spread out above us must always be a source of satisfaction and pleasure to the student. He comes in time to look for and welcome the suc-

cessive re-appearances of the different groups, as season follows season and the time of their arrival approaches, and this aside from the great pleasure which a more detailed study and exploration of certain selected regions of the heavens may afford him.

It was by observing the appearance and withdrawal of various star groups that earlier peoples fixed their seasons and determined the proper times for the many processes of agriculture. Thus the first appearance of the Pleiades in the evening sky definitely marked the beginning of the harvest season, while their withdrawal (in April) showed that the time for sowing had come. And more than this, one familiar with the stars can tell with much accuracy the exact hour during any night of the year. For example, if he noticed that on November 1 the heavens were as in Figure 1, with Orion and Gemini just rising and the Tail of the Serpent just setting, he would know that it was 9 P. M. The heavens would also present exactly this same aspect at 11 P. M. on October 1 and at 7 P. M. on November 1. As the turning of the Celestial Sphere seven bright constellations that are visible to us, and twenty-three fainter ones. The beginner should only study the brighter ones at first and he should not make the mistake of trying to learn

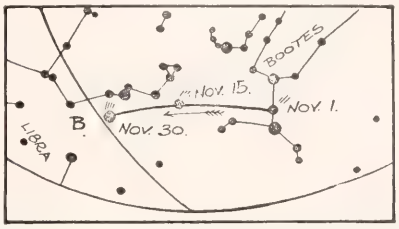



Figure 2. The stars near the western horizon at 5 P. M., November 1, showing the path of the new comet.

too many at one time. Let him, for example, spend the first evening learning the outlines of Pegasus, Andromeda and Taurus and observing how the positions of these groups change with reference to the horizon as the hours of the night go by.

On the next evening, let him begin by again tracing out these three constellations and afterward extending his studies, either to Cassiopeia and Perseus in the north or to the faint groups, Triangulum, Pisces and Aries, in the

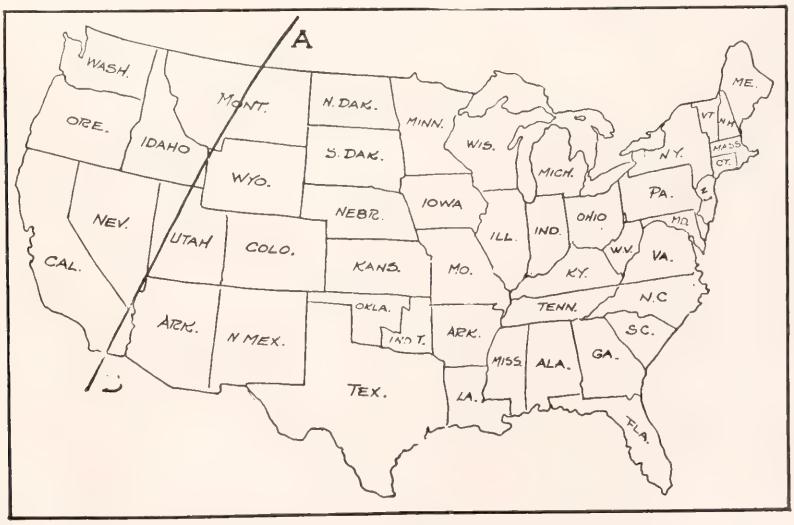



Figure 3. The Transit of Mercury. To all observers in the United States east of the line A B, the sun will be seen to rise on the morning of November 7 with the planet Mercury projected upon its disc. To observers west of the line the transit will not be visible.

is perfectly uniform and the apparent, yearly, westward motion of the constellations is uniform also, the observer soon learns which constellations are rising and which are setting at any hour of any night of the year.

There are altogether but thirty-south, never passing to a new constellation until he is satisfied that the ones already studied are perfectly known. He will find that the study, though perhaps a little difficult at first, becomes much easier the longer it is pursued and by advancing slowly in

this way he will after a few evenings be surprised to find how much of the sky he has already learned.

If he possesses a small telescope he will find with it remarkable nebulas at N and M, Figure 1, beautiful star groups and clusters at A, B, O, R and S, double stars at the points marked D, and many other interesting objects. Though in the beautiful groups of the Pleiades but six stars are easily visible to the eye, a small telescope will show twenty or more, and a delicate photographic plate will show no less than two thousand. This cluster is so distant that its light requires two hundred and fifty years to make the journey from it to us, and its stars are immersed in and connected together by faintly shining nebulous matter. The cluster is thus known to be a physically connected group of stars. Very recent investigations indicate, too, that much of this nebulous matter is not self-luminous, but is opaque matter, which shines only because it is illuminated by the rays of the many nearby suns.

### The Motion of the Moon.

The student of astronomy knows that the differing aspect of the heavens in the different seasons is wholly due to the apparent motion of the sun, which is seen by us to follow the path W V E, Figure 1, among the stars, completing the entire circuit of the heavens in one year. The monthly path of the moon does not depart from this line, but our satellite is subject to so many disturbances that it never follows exactly the same course among the stars for any two months in succession. At 9 P. M. on November 1 the observer may notice that the center of the moon is at U, between Aries and Pisces; from here it moves rapidly eastward, passing above the Pleiades and below the star at K, and reaching the point W at 9 P. M., November 6.

Full moon will occur at 6 P. M. November 3, at which time the moon will be slightly to the east of the Pleiades. On November 6 at 6 A. M. observers south of the earth's equator will see the moon pass over the bright star at K, though as seen by us, who are so much farther north, our satellite will appear to pass below this star. From here the moon will cross Gemini, move very slightly below the bright star Regulus, in the Lion, pass around the other half of the heavens and finally again enter the evening sky and be found at the point X, on November 21 at 9 P. M. It will again be found in Taurus on December 1, but careful observation will show that its course among the stars is a much more southerly one than that which it followed a month earlier.

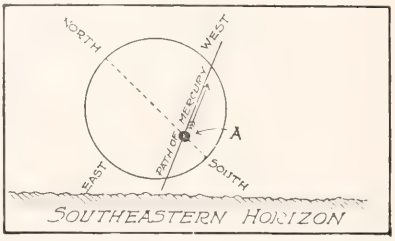



Figure 4. Appearance of the sun at sunrise on November 7. Eastern observers will then see the planet Mercury at the Point A.

When the moon is below the equator (as at X) it sets very far toward the south; when above the equator (as at W) it sets far in the north and remains above the ground much longer than twelve hours. It is in the same way and for the same cause that the points of the horizon at which the sun rises and sets are continually altering. The sun is farthest below the equator and we have the shortest day on December 22; it is highest in the heavens on June 22. The moon in a similar manner passes from its lowest to its highest position among the stars in less than two weeks, and this is therefore the interval between the shortest and the longest "Moon Day."

### The Planets in November

Mercury at the beginning of the month is lost in the sun's rays; on November 7 it passes across the sun's disc thus entering the morning sky, where it reaches its greatest western elongation on November 23. For a few days before and after this last date it will rise nearly two hours before sunrise and may be detected low in the dawn in the southeast.

Venus is also rapidly approaching the sun and will withdraw from the evening heavens on November 27. During the first part of the month it may be seen very low in the southwest after sunset, and if the observer will persevere in the rather difficult task of following it with a small telescope he will be well rewarded for his

trouble. He will see the brilliant crescent increasing rapidly in size but also growing narrower. It is at this time, too, that the crescent can be clearly seen to exceed a half circle in length, a fact which clearly proves that Venus is surrounded by a heavy atmosphere.

Mars sets in the southwest less than one hour after sunset on Nov. 1, and this time decreases to only twenty minutes by November 20. The planet will not enter the morning sky however until December 24th.

Jupiter and Saturn are both in excellent position for observation, the former in the southeastern, and the latter in the northeastern, sky. Throughout the month Saturn will remain near the bright star at F, Figure 1, and it will be easily possible, by carefully comparing the relative position of these two objects from time to time, to detect the motion among the stars of this very slowly moving world.

Uranus is in Capricornus, a little to the right of Jupiter, and Neptune is in Gemini, beyond the borders of our evening map.

The interesting bright comet which has been easily visible to the eye in the north will, during November, follow the path AB, Figure 2. During this time its distance from the earth will increase from one and sixty-one to one hundred and eighty-five millions of miles and it will consequently lose one-third of its brightness. It will, however, remain a bright and interesting object in a small telescope.

There are no less than three other comets now in the sky, but these are far fainter and can only be viewed in a large telescope.

### The Transit of Mercury.

This most interesting phenomenon will occur on the morning of Nov. 7. The small, round, intensely black disc of the planet will enter upon the sun's disc at 4 hours 57 minutes A. M. and will leave it at 9 hours 10 minutes A. M. (Eastern Standard Time), the entire transit thus occupying four hours and thirteen minutes. As the sun does not rise in the eastern states until 6 hours 36 minutes A. M., from this region it will be seen to emerge from below the ground with the planet already advanced one-third of the way upon its disc. To observers west of the line A. B., Figure 3, the sun will not rise until the transit is over, so that to them the phenomenon will be wholly invisible.

Such transits afford valuable data for improving our knowledge of the path and motion of Mercury; it has also been shown from an elaborate study of all of them that the length of our day, —the unit of all time—is, as nearly as we can determine it, invariable. It is also when Mercury is in transit that evidence of its possessing an atmosphere is searched for.

The next transit of Mercury, after this one, will not occur until the evening of May 7, 1924. This will not be visible from the eastern parts of the United States.

### Feeding Habits of Fresh Water Mussels.

The **Biological Bulletin** for September prints some new observations on the feeding habits of eight different species of American fresh water mussels.

The food is largely microscopic diatoms and desmids with less amounts of animalculae, minute eggs, and the free-swimming spores of green plants. These come in with the water for respiration which is drawn through the syphon at the rate of a little less than three pints an hour for a seven ounce animal. The cilia which everywhere line the gill chambers, whip these small particles toward the mouth, while a coating of mucus gradually unites them into convenient lumps. Non-edible particles are agglutinated in the same way, and then expelled by a sudden current made by closing the shell.

All the foodstuff that happens to come in the water is swallowed whether the animal is hungry or not; but only so much is digested as the creature happens to need.

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They are trying at the University of Pennsylvania a new method of getting cultures of **amoeba**. Instead of the customary hay infusion, they are mixing samples of water taken from many different sources—clear and stagnant ponds, swamps, sewage-polluted streams, ditches, and the like. In this manner, they make sure of getting a mixed culture which contains both the **amoeba** and its food in a sort of "balanced aquarium."

### In the Welcome Reception Room.

September 24.—Mr. Charles B. Allyn of Riverside entertained a party of friends in the Welcome Reception Room. An extended and very enjoyable musical program was provided. Some of the special features were solos by Mr. Arthur Dorland, solo by Mr. Brush, and a duet by Messrs. Dorland and Brush. Miss Edith Wasman of New York City was the accompanist.

October 26.—Farmers Club of Greenwich.

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### "The Child's World" and the Poet's World.

"One of my latest paintings is called 'A Child's World.' I see that to the child the whole world is unadulterated magic and pure mystery. My little boy hasn't classified anything as yet. The butterflies, the birds, the flowers are all miracles to him. It is a notable fact that the same state of mind concerning Nature has been held by the greatest poets in their maturity. They come to a point where they refuse to classify any further. They refuse to allow the mystery to be withdrawn from an object by the naming of it. Their minds are one with children's in this matter. We have become so scientific that we are superficially scientific. We take a seed, for example, and we realize that there are certain elements in it. But, while we know that there are certain and definite amounts of chemical substances in the seed, it is not often that we stop to think that it contains the completed tree. You never know or understand a subject by learning its elements and ingredients. You have to learn its tendency as well. And that is where the minds of children are far superior to those of their average elders."—Van Dearing Perrine.

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A Boston lady attended a funeral in a country church a short time ago. After the singing of a hymn which was strikingly melodious and appropriate, a rustic male friend who was seated beside her remarked, with an air of intense local pride:

"Beautiful hymn, isn't it? The corpse wrote it."—Selected.

### For Blackboard Work.

Isn't it curious that among all the improved methods for schoolroom work, there has not been until quite recently adequate provision made for the most conspicuous of all schoolroom work, namely, blackboard work. Plain white crayons have long been in the market, but for the teacher and pupil desiring colored crayons, we have had nothing but the poor little affairs in poor little packages sold for a cent or two, and worth no more But the Binney & Smith Company, of New York City, now offer a first-class set of such crayolas and at a moderate price. The set includes a variety of qualities, colors and shapes, well adapted to every conceivable form of color decoration and color work on the board. Address the company at Fulton Street for particulars, and do not forget to refer to THE GUIDE TO NATURE.

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### New Catalogue of Photographic Lenses.

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A new edition of the Naturalists' Directory has just been published by S. E. Cassino, Salem, Mass. This directory is invaluable to naturalists since it is the means of bringing together students and collectors in all parts of the world through correspondence. The directory contains an alphabetical list of English speaking professional and amateur Naturalists in all parts of the world, also a lists of Scientific Societies and Periodicals. The price of the Directory is $2.50 in Cloth Binding and $2.00 in Paper Binding. Sent postpaid. As only a limited edition has been printed it is advisable for any one wishing a copy to order at once.

# The Guide to Nature



Vol. VII DECEMBER, 1914 No. 7

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### He Skillfully Worked It In.

An oratorical farmer, who often took a prominent part in the lyceums and the debates at his local grange, got into the habit of winding up his vociferous arguments by shouting, "Give me liberty or give me death." He was a good debater but his associates wanted to break him of the tiresome habit, without telling him directly that he was overworking Patrick Henry's well known declaration. The committee appointed to assign topics for discussion racked their brains to find a subject in which he could not so maltreat Patrick Henry and his patriotic cry. They selected the most practical, prosaic topic that they could think of: "Is colic in a horse fatal?" They assigned the negative side to the patriotic, war clamoring farmer who proceeded in a matter-of-fact manner to state that colic can be cured. He had known many such cases. He detailed the simple remedies and the proper treatment, and declared that he would not regard a horse suffering with colic as in great danger, and then as he waxed warm with his argument he became eloquent and concluded his exposition in these words:

"And so, fellow farmers, I have proved to you that after all colic may be cured by the aid of simple remedies. It is not a serious disease. We have come to think of the painful outcome more than the real cause which is merely gas in the horse's stomach which, if still kept compressed, results disastrously, but if remedies are applied to release it then all will be well. In other words, gentlemen," and here he waved his hands aloft, "this thing that we have regarded as a simple matter is merely gas, gas screaming out to us, 'Give me liberty or give me death.'"

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The lack of knowledge of normal students regarding the most elementary of common nature forms is astonishing. An instructor in one of our normals has made a careful record of students entering his classes for a number of years and he reports that the average high school pupil coming into his classes knows about eight birds, eight trees and eight insects. —Ora May Carrol in "The Nature-Study Review."

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### Boys Who Shot Squirrel.

THEY ARE LOCATED, BUT MR. BIGELOW DECIDES NOT TO PROSECUTE.

Edward F. Bigelow, the Laird of ARCADIA, has, with the assistance of the police, located the young men who trespassed on ARCADIA, October 8, and shot a pet squirrel, removing the animal after it was shot. Harold E. Isbell of Taff Avenue and Marvin Street was the youth who did the shooting. Walter H. Morris of 23 Taff Avenue was with him. The police ascertained this, and, Saturday evening, Mr. Bigelow, who loves boys as dearly as he does animals and all nature, agreed not to prosecute the boys, if they would give the police five dollars to pay the reward offered to the person supplying the information. The lads were warned of the danger of entering other folks' property to shoot game and the warning will, no doubt, have a general effect.—"The Daily Advocate."

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The London County Council is placing memorial tablets on the various houses in the city in which distinguished persons have lived. Among the latest is one at 36 Craven Street, where dwelt Benjamin Franklin.

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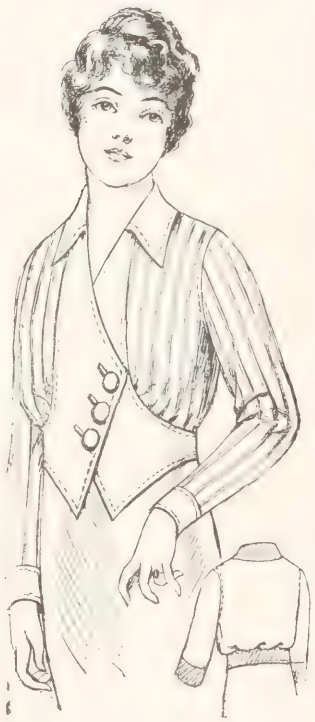
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8462 Blouse with Vest Effect, 34 to 42 bust.

Here is a blouse which shows distinctly new features. It is quite simple and severe enough to be made of linen or pique and it also is well adapted to the various tub silks and to combinations of materials. Since the washable silks launder quite as well as cotton and linen, it is easy to combine them and the effect is extremely handsome. In the illustration, striped tub silk is made with vest, collar and cuffs of white pique but, in the back view, white linen is combined with colored.

### He Liberally Exercised the Chautauqua.

In southern Indiana, in the vicinity of Tell City, a Chautauqua was recently held for the first time. The enterprising committee in charge of the affair advertised it by posting placards and handbills on barns and fences throughout the surrounding country. This method was so familiar to the country lads that they supposed this Chautauqua to be a new kind of circus. While I was recently in that city a farmer related the following experience with the Chautauqua. He had on the farm a young man not blessed with extensive mental attainments who became eager to spend a day at the Chautauqua. The farmer was surprised because the farm hands seemed to be about the last persons in the world to clamor for high-class musical and literary entertainment.

In the suburbs of the Chautauqua ground some enterprising collector of nickels had placed a merry-go-round and here a crowd had gathered to enjoy the riding and the machine music. The country lad supposed he had found the real thing and spent nickel after nickel, passing the entire day on the merry-go-round. When he returned home tired with the day's activities and the long walk the farmer said, "How did you like the Chautauqua?"

"Grand, perfectly grand, but I'll tell ye I rode the durned thing 'most to death."

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It is not your work merely, what you do in the world, that measures your influence, but the way in which you do it.—Henry van Dyke.



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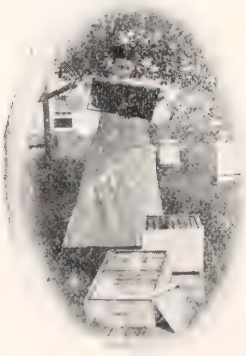
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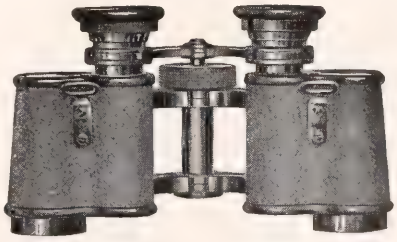
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# Our ArcAdiA Page

**Looking One Hundred Years Ahead.**

Within ten years Stamford and Greenwich have made forward strides that are marvellous. Fifteen years ago three hundred houses were for rent in Stamford, and Stamford was then much smaller than it is now, but since that time building operations have been active and a surprisingly large number of public buildings and private residences have been erected. The builders of our new library, town hall, churches, schools and many of the finer residences are evidently looking ahead for more than a hundred years.



THE FIRST STAMFORD HOME OF THE AGASSIZ ASSOCIATION.
This building, twelve by thirty, succeeded a smaller "natural history workshop" only eight by twelve feet.

In these structures have been invested much time and money for the benefit of future generations.

One hundred years hence Stamford and Greenwich will be twin cities with a population of more than a half million. Cities of that size extending toward each other until they come in contact will appear, when the Connecticut shore is looked upon as from a balloon, like one great active colony filled with lively human beings. There will be a concentrated nucleus at what we know as Greenwich and another at the city hall in Stamford, but the two cities will be one and under one name. They will coalesce into a greater Fairfield City with two districts. Stamford and Greenwich. Such a vision of events one hundred years in the future may at present seem Utopian, but even now many parts of Greenwich and Stamford would be unrecognizable by a person who had lived there one hundred years ago if he were to return to-day. Such a gigantic city, or cooperating cities, if you prefer to call them so, will possess one large natural history Institution. That will be ArcAdiA at Sound Beach, Connecticut, ideally located for the convenience of both cities by trolley, train or otherwise. There is no equally convenient place in all Fairfield County, to say nothing of either Stamford or Greenwich. ArcAdiA will then be a nature university, sending out its students to establish other ArcAdiAs in all parts of the land. It will have in connection with it, for which the location in the suburbs of both places is ideally fitted, a zoological garden, a botanical garden, a laboratory and a museum, with dormitories to accommodate students the

year round, and the larger number of students at the summer school.

Eight years ago ARCADIA began in a plain, eight by twelve board building in a small back yard on Grove Street. Stamford. In these eight years the growth has been phenomenal, because the Institution has supplied a popular need, not only locally but generally. Founded on right principles it is not solely a local natural history Institution. In these eight years there has not been a week that has not seen steady growth. Every Saturday night something has been added that was not there on the previous Saturday, until now we have four hundred and twenty feet of road front, eight buildings, nearly three acres of ground, with a grove of more than one hundred and fifty trees. We have at present facilities either indoors or out for accommodating one hundred and twenty-five guests. The premises are lighted by electricity. The office is perfect in system and equipment, and the laboratory is abundantly supplied with working apparatus. Toward this eight years of growth rich and poor, old and young, in all parts of the world, have contributed. Devoted workers have helped by contributions of ten cents each when such contributions came hard. Multi-millionaires have helped. Little children have asked, "What is this?" and have received the explanation; the best scientists of the land have been aided in their work. Any one who has followed this progress and noted the widespread spirit of public approval, and noted how even those who at first laughed and ridiculed have come to respect what ARCADIA stands for, cannot fail to see that we are advancing toward a great Institution that must grow even more rapidly than Stamford or Greenwich, because we are **not locally limited.** Our growth thus far has been perfectly natural. It has met an actual need so far as it has been able, and in supplying this need has opened even greater vistas beyond. Our struggles have been many and painful, even pathetic. Very often parts of our experience, as viewed from the inside, have bordered on comedy. It would have been comedy if it had not been pathos. In spite of astounding drawbacks and curious somersaults of plans, there has not been one week of retrogression, but a sure and steady advance.

One hundred years hence, when on the centennial anniversary the whole story of these earlier struggles shall be told in talks and pictures, the people then will wonder how so faithful and commendable an Institution was obliged to struggle through such astonishing experiences. When we note other great institutions of the present that are still growing greater, it is pathetic to note their simple beginnings; it will be equally so with the great ARCADIA, a Nature University, known the world over.



THE PRESENT (SOUND BEACH) ARCADIA, HOME OF THE AGASSIZ ASSOCIATION.
There are eight buildings with a road frontage of four hundred and twenty feet.

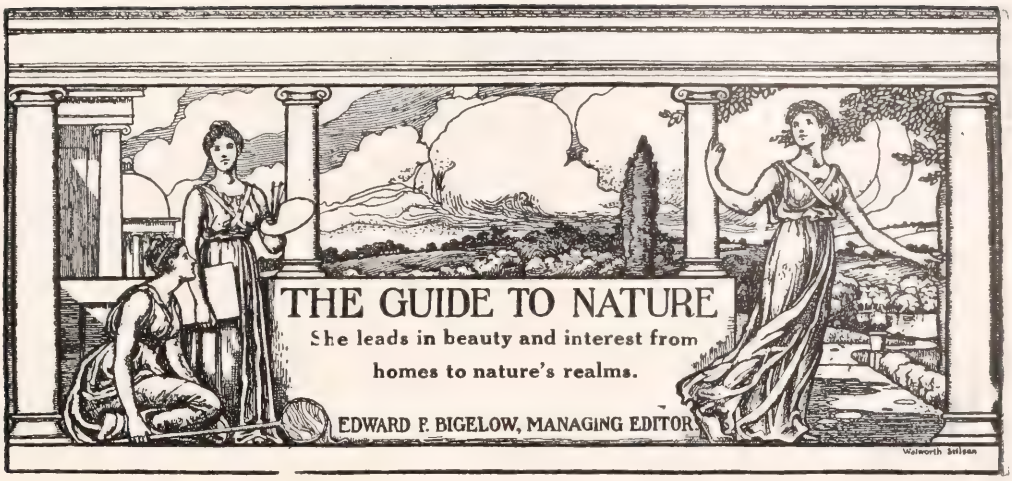


# ASPIRATION

By E. J. SAWYER

(With decorations by the author)

Is a gloomy, humdrum loft seen here,
With straw and litter and want of cheer?—
Or the husks and pottage mess unshared,
Where an unloved life has daily fared?
And is it the common light of day
That illumines a ladder with golden ray?—
Or a smile more welcome than angel's own,
Making things mundane seem steps to a throne?
What springs like enamored, yearning dove,—
Where the radiant ladder points above,—
In rapt, seraphic poise and flight?
What sees the soul in such a sight?
Itself—as when, on love-lent wings
Of aspiration of loftier things,
It soared with more than speed of light
Toward the seat of Majesty and Might.




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut

Subscription, $1.00 a year  Single copy, 10 cents

Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII  DECEMBER.  Number 7

# An Efficient Student and Protector of Birds.

BY NEIL MORROW LADD, Belle Haven, Greenwich, Connecticut.

A VISIT to the home of Raymond B. Thompson at Greenwich, Connecticut, is an inspiration to one interested in birds and their protection.

When the visitor enters the long road leading to Mr. Thompson's house, he is impressed by the careful planting of shrubs and evergreens, and the careful neglect of some natural brier patch, where shy birds find nesting sites. When he leaves the grounds beyond the lake, upon which paddle various species of ducks, the enthusiast has found countless indications that he has been in a private sanctuary for the birds.

Close to the home one sees a Berlepsch food house where the birds may always find a supply of hemp, white millet and sunflower seeds. During the winter there is never a half hour when some bird resident or visitor cannot be found enjoying this practical bird lover's hospitality. The writer knows that Mr. Thompson buys seed in hundred pound lots to meet his feathered guests' appetite and demands.

Under the eaves one will find shelves, each five inches square, set in place for phoebes, and this year one of them has been occupied by these tireless flycatchers. Close by on trees are suet holders which woodpeckers, nuthatches and chickadees visit daily in the winter, to supplement the insect diet that they glean from Mr. Thompson's hard wood forest.

Scattered everywhere are rustic wren boxes. To give the birds what little encouragement they need, tin cans have been tacked to trees, and this year within a stone's throw of the house twelve pairs have raised families in them.

Where the house plot ends and the woods begin are about ten square yards of tangle that would make a modern gardener frantic, but where the wild grapevine has woven a cover seemingly secure enough to walk on. In this untamed thicket catbirds, brown thrashers, thrushes, robins and song sparrows this summer successfully reared their young, while above it, on a horizontal limb, wood pewees built their nest and made it beautiful with lichens.



MR. THOMPSON'S LOG CABIN ATTACHED TO HOUSE.



HE HAS SOUVENIRS OF MANY EXCURSIONS TO DISTANT WILD NATURE.
Photograph by Brown & Dawson Stamford, Connecticut.

In an evergreen on the edge of a much travelled path, blue jays nested, and chipping sparrows built in the rose covered arch at the entrance to the garden.

Throughout the thirty-four acres about fifty Berlepsch nesting boxes of various sizes are distributed. These houses are scientifically correct, and have had for occupants hairy woodpeckers, bluebirds, nuthatches, flickers and screech owls.

Club, and while the writer would like to describe the garden, space forbids. He would, however, emphasize the fact that the lovely garden never needs spraying. The birds, in return for protection, keep it free from destructive insects.

All last winter Mr. Thompson fed a covey of twenty-four quail. This summer a pair nested close to the house.

The success of this bird sanctuary



MR. THOMPSON IN A PICTURESQUE PART OF HIS BIRDLAND.

Colony houses erected for purple martins have not yet been occupied, but this fall Mr. Thompson has made the entrances one and seven-eighths inches in diameter, large enough for martins but too small for starlings.

Early in the spring Mr. Thompson experimented by tying together the branches of shrubs and of bushes about three feet from the top, so as to make artificial whorls to attract nest building birds. Last month of seven such nesting sites two had been occupied by catbirds.

Mrs. Thompson, an enthusiastic worker in her garden, is a member of the newly formed Greenwich Garden

is not due to magic. The secret consists in keeping the place free from homeless cats. Since March, Mr. Thompson has caught twenty-nine such cats in a box trap, and one skunk; but that is another story. Water is always present for bathing and for drinking. Nesting sites are allowed to grow into tangles, and bird boxes are properly placed on trees. Seeds and suet are supplied during the winter. This is the whole story.

The reader may not possess thirty odd acres but if his home is not in a big city, and if he has a love for birds, he can attract them about his house and into the garden.



LOOKING IN THE OPPOSITE DIRECTION FROM THAT OF THE PREVIOUS ILLUSTRATION.

Mr. Thompson's work in behalf of the birds is not limited to his own estate. He is General Manager of the Greenwich Bird Protective Society, Incorporated, and however busy he may be, he always finds time to answer questions and to make suggestions relative to the protection of our native birds.

---

Walcott estimates that at the geologic age at which the earliest known fossils occur, nine-tenths of the total evolutionary process had already taken place.

### Need of Further Aid in Nature Studies.

The income of no single research institution now extant, or likely to be founded, can come anywhere near meeting the wants of the great army of competent investigators now pressing for financial assistance to forward their researches. Indeed, neither in a single institution nor in all of those now existing combined, nor in a score more of such, will there be found sufficient funds to supply the world-wide and rapidly growing demand for them. —Dr. R. S. Woodward.

### Feeding Habits of Snakes.

The Curator of Reptiles at the New York Zoological Park points out that our common venomous serpents have two quite different methods of handling their prey. Those which live on smooth-skinned, cold-blooded, and defenceless creatures like frogs have their poison teeth short and at the back of the mouth. These bite hard, send the poison down a groove into the wound, and hold on till the prey is dead.

Those snakes, on the other hand, which live on warm-blooded, active, fighting creatures, have tubular fangs long enough to stab through fur or feathers, and set forward in the mouth. These snakes give one quick stabbing bite, immediately let go, and follow the stricken animal at a safe distance till he succumbs. A few snakes that eat both sorts of animal hold one and stab the other.

This trick of striking and letting go seems to be the only foundation for all the old yarns of serpents fascinating their victims. Somebody happens upon a bird, evidently in sore straits, with disheveled feathers and wabbling legs. Pretty soon it falls off its perch to the serpent waiting below. It looks as if the latter had held it with his glittering eye. But if the observer had been on hand five minutes sooner, he might have seen the same serpent strike the same bird and let it go again to save its own skin. The "charm" of the watching reptile is only the poison of the previous bite. Nevertheless, snakes do apparently use their red forked tongues to arouse the bird's curiosity and lure it within striking distance.

Curator Ditmars describes the ordinary water snakes as swimming along the bottom of ponds for the sake of getting under the schools of small fish. Whenever they see these against the light they turn up suddenly, with open mouth, and grab whatever fortune brings them. A single reptile, hardly more than a yard long, disgorged when captured three sunfish and eleven suckers running three and four inches in length. Naturally, such creatures play sad havoc in ponds stocked with game fish.

One function of the somewhat mild venom of certain of these water serpents is to paralyze the muscles of the fish so that the finnrays lie flat and harmless while the mouthful is being swallowed head first.

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### "Sap" by the Pailful at Any Time.

Every boy on an isolated country farm, and dependent upon his own resources for enjoyment, knows especially well the delight of tapping certain trees and of going every day to take a pailful of the delicious natural water that the tree has poured out at his bidding.

It may easily be imagined that Mr. Fitch A. Hoyt of Stamford, Connecticut, has had such experiences or has been greatly attracted by accounts of them, for with considerable Yankee ingenuity he has placed near a wayside well a pump within a tree. This original device that ornaments the roadside in front of his daughter's (Mrs. Paul Lockwood's) home is not intended for the use of the family only, but the "sap" that flows from the tree is free



AN ORNAMENTAL AND USEFUL PUMP.

to all, and many a weary and thirsty man has enjoyed the cheering draught. Such a boon so freely shared is magnified and many times magnified. It never will grow less. The water from this well for decades has been and long will be a delight to people unnumbered and unknown. It is an old-time well, placed in the old-time fashion and the water is the purest spring water that, if bottled, would sell readily in any city at any time.

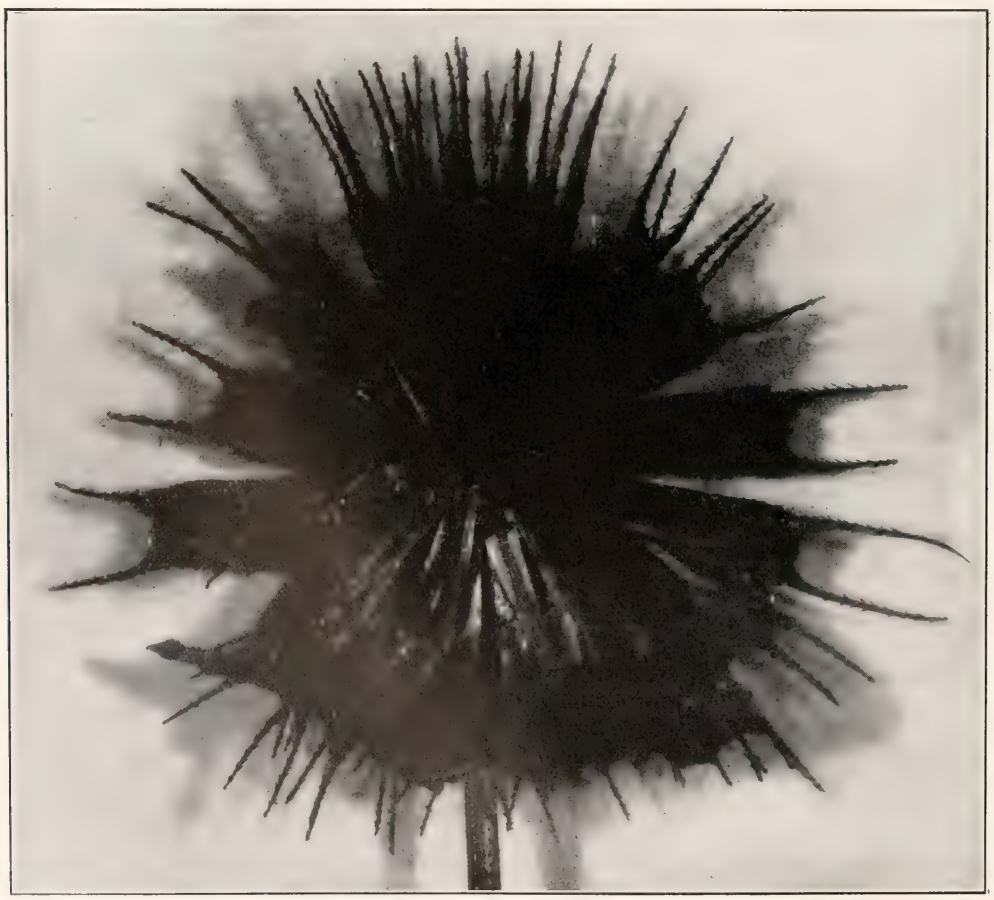
Here is a good suggestion to our readers who would like to adorn the well that is perhaps unsightly, and yet have the ornament useful, as few ornaments are. Our local readers who know the genial Mr. Hoyt will be pleased by the accompanying illustration.

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### A World of War.

In these days, when so much is published about the horrible war in Europe, and while certain nations are using every possible means, even those that are fiendish, to extend their territory or to prevent its restriction, it is well for us to note that nations are not alone in warring, nor in using methods that have no regard for the convenience, the welfare or the feelings of others.

Nearly all forms of plant and animal life are in a struggle for existence. Darwin was nearly right when he referred to the survival of the fittest. It seems that in some cases the most devilish survive. Everyone is familiar with some of the methods by which many of our common plants extend their domains without regard to the rights of other plants or animals. But the war is chiefly between plants and animals, although one botanical writer has well described the state of plants as mostly that of "armed peace." Can there be anything more annoying than



THE STICK-TIGHTS EXTEND BARBED BAYONETS IN EVERY DIRECTION.

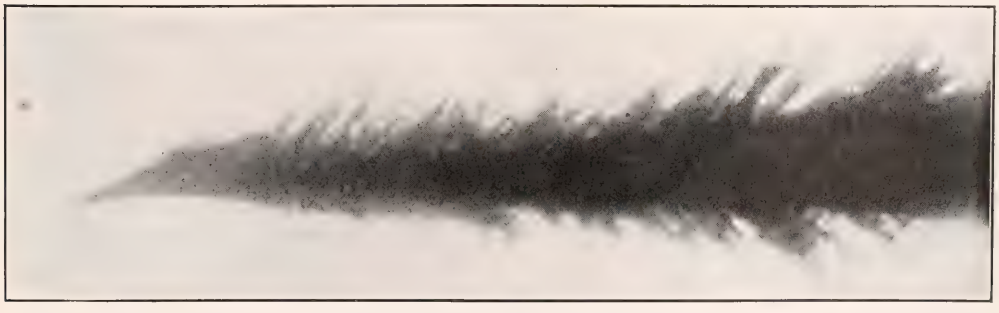


THE WELL-ARMED SEEDS OF WILD CARROT.

the manner in which many of our stick-tights (*Desmodium*) cling to our clothes or to the fur or hair of animals? Their means of attack seem as carefully devised to accomplish the purpose, and even to inflict pain, as any method used by contending armies. The pitchforks or stick-tights point their armed spears in every direction so as to pierce whatever comes in contact with them.

We have also the curious seeds of the common wild carrot (*Daucus carota*). This plant is remarkably successful in its struggle for existence. Could there be any device of war more skillfully planned or more successfully worked out than these fiendish spears with their sharp barbs?

There are in many parts of the United States grasses belonging to the genus *Stipa* that have plumes and even



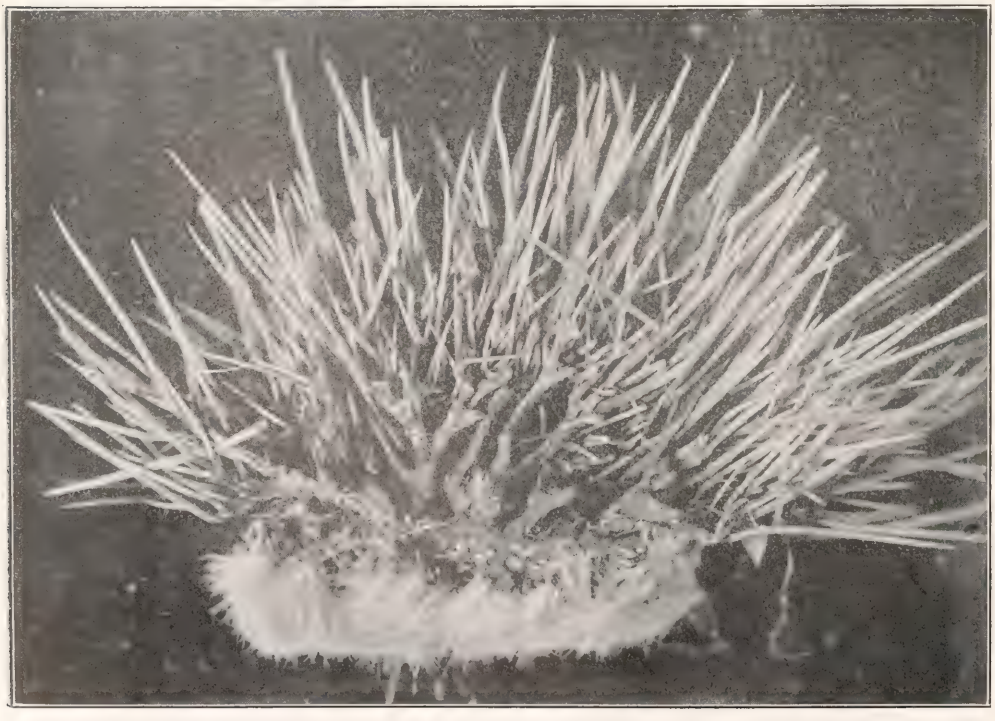
THE STIPA GRASS HAS A SHARP POINT WITH INNUMERABLE BARBS ON THE SHAFT.



THE CALTROP IS REALLY FIENDISH.

barbs pointing backward from a very sharp tip, designed as a covering for the seed and to carry it in clothing or the fur of animals and then to bury it in the earth. The accompanying illustration shows one of these barbs. Attached to it is a long extension that aids under certain conditions, especially under the influence of moisture in the air, in driving the seed into the ground.

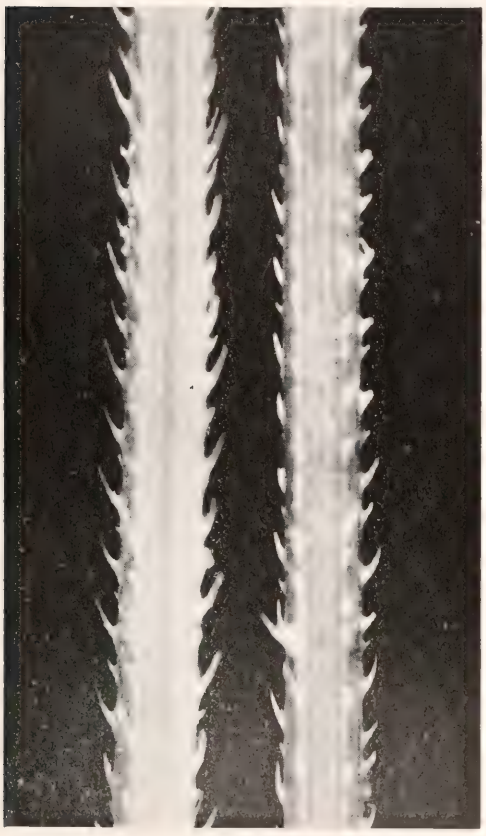
One of the most fiendish of all methods is that of the caltrop that hides in the sand. The sharp spears are so arranged that they point from every part of the seed. One is always standing erect. These thorns enter deeply into the hoofs and soles of the animals that



THIS COSEY HOME OF THE CHESTNUT REQUIRES A LARGE STANDING ARMY.

tread on them, and cause painful wounds. The animal carries the seed to a distance, and the plant has then accomplished its purpose; it has widened its range of growth.

The manner in which this caltrop,



IT IS WELL NAMED "TEAR-THUMB."

sometimes called a tribulus, succeeds in its cruel work reminds one of the modern submarine vessels that work in secret, hidden beneath the water, or destroy other vessels by means of concealed torpedos. The caltrop, like the nations at war, is trying to extend its territory by inflicting pain or injury on innocent and defenceless non-combatants.

### The Inventor and the Investigator.

In general the objects of the investigator are mainly altruistic while those of the inventor are mainly egoistic; the one seeks to give freely to the world the results of his researches, the other seeks personal benefits by aid of letters-patent.—Dr. R. S. Woodward.

### Inheritance of Milk Yield.

F. R. Marshall of the United States Bureau of Animal Industry, after a careful study of some thousand or more registered Holstein cattle, declares that there is no foundation whatever for the very widespread impression that either milk-yield or yield of butter fats is inherited more fully through the father than through the mother. He finds that, on the contrary, where both parents are of equally good stock, offspring are as likely to follow one strain as the other.

### The Captive Hawk.

One of the magazine's friends mails to us a photograph taken by Mr. John G. Herrick, North Weare, New Hampshire. The hawk there shown was trying to catch chickens. His escape was prevented by a wire netting and the low boughs of an apple tree. A woman seized the hawk's legs and, after tying them, put him in a bag. She then gave the bird to a neighbor who disposed of him after taking several photographs. This variety of hawk is the worst enemy with which the poultry raiser of that vicinity has to contend. During some years these hawks are so plentiful that at least half the flock of chickens is carried off. It is impossible to keep the chickens completely yarded and protected by



THE CAPTIVE HAWK.

netting. They must have some freedom to seek food, grass, etc., and in that freedom the hawks swoop down and carry off many of them.




SNOW BUNTINGS.

Correspondence should be addressed to the editor, Mr. Edmund J. Sawyer, 715 Franklin Street, Watertown, New York. Everything in this department not otherwise credited is by the department editor.

**Children and the Study of Birds.**

Any one supposed to know even a little natural history will early be forced to take some stand in regard to the problem of the child and the bird. Children when they have half a chance prove that they are born bird lovers; if they are boys, normal, vigorous, healthy boys, this love is likely to find expression in the form of sling shots, air guns, spring guns and other snares of the fowler. It was ever the boy's way of wooing the wild creatures. He will shoot them, trap them, kill or cripple them by fair means or foul; but, believe me, he loves them nevertheless.

I once knew a boy that broke both bones of his right arm while shooting birds with a sling shot. While the arm was still bandaged and entirely useless he would steal into the back yard and shoot at robins in the adjoining garden by bracing the crotch of his sling in the picket fence. That was twenty years ago. Now the boy, an




SLATE-COLORED JUNCO.



A MUTUAL SURPRISE.

artist-ornithologist by profession, has bird loving boys of his own, and it is his hope that they may, almost his boast that they will, "name all the birds without a gun."

The plea of "science" can no longer excuse, if it ever could excuse, the indiscriminate slaughter of birds. Our great museums are groaning with their accumulated hundreds of thousands of

bird skins carefully labeled and classified, in many cases a single species with its geographical races being represented by thousands of specimens. Ornithologists now concede that practically nothing more can be learned about the plumage of our birds. The poets have always taught that the eye is better than the gun; science is now willing to say that the field glass is better than either.

Familiarity never bred contempt for wild life. On the contrary I have met bronzed, hardened old shooters who had outlived the lure of the gun. The old fire was there, the eyes would still kindle at the mention of partridge or of fox; they could level my rifle or shotgun at a mark in a way that showed their trigger fingers had not yet lost their cunning, but it was easy to see that they had learned to love the gun "not less, but Nature more."

The eye is better than the gun; the wild wood better than the cage. It is better to "put salt on a bird's tail" than, in the language of taxidermy, "arsenic and alum in equal quantities." "Teach the child to love the wood flower and leave it on its stem"—*for further study.* E. J. S.

### An Identification.

Evans Mills, New York.

Dear Mr. Sawyer:

I enclose a bird's wing that to me is new. The bird was shot a few days ago while I was duck hunting in the marsh. It was standing and stretching one wing when I first saw it. I shall be glad if you will tell me its name.

Yours very truly,
HENRY DUMAS.

The wing is from a Virginia rail, a marsh bird about the size and general form of a Wilson snipe or jack snipe. It is not uncommon in suitable localities. E. J. S.

### A Letter from Mr. W. B. Mershon.

The author of the book, "The Wild Pigeon," writes the following interesting letter about the birds he knew so well. E. J. S.

Some time ago you sent me the October number of THE GUIDE TO NATURE. The pictures are mighty good. You have a first-rate picture of the pigeons in flight; the long arrow-shape impression that they give, I don't think has ever been copied or observed by any other artist and it gives the true idea of how these birds looked. Your flight formations are good but I do not recall that while they were in flight they ever stopped in transit in the trees. In a thick woods there might be a few of them that would light in an old, tall, dead tree.

Yours truly,
W. B. MERSHON.

### A Pet Owl.

No, this is not, and never was, a bird in the hand—fortunately for the "hand!" I am fond of my pet



THE GREAT HORNED OWL.

owl, and wish him well, but I fear that all the pleasure of shaking hands with him would be his. I was hunting grouse when I first saw him flying through the swampy woods. One shot injured a wing, and he was soon at bay. He is a great horned owl, the largest and most powerful of our resident species. In nature his food includes grouse, rabbits, hares and skunks, as well as smaller birds and mammals. As a captive, he has a menacing way of ruffling his feathers, till he looks twice his actual size.

# ORNITHOLOGY

## A White Sparrow.

BY C. D. ROMIG, AUDENRIED, PENNSYLVANIA.

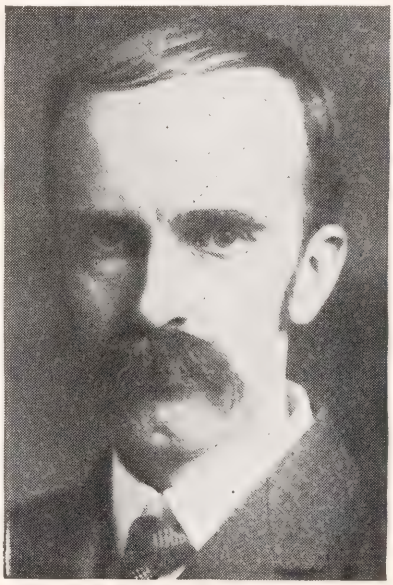
About seven years ago I frequently saw a sparrow which, when flying, exhibited several pure white feathers in each wing. Recently, for the third time, I have seen a better specimen which, when standing, shows a large white spot on its back. During flight there is a large display of white across the back and wings, and all the tail feathers have white tips.

When the bird is on the ground, the spot on its back looks exactly like a white butterfly. There is no question about the bird's identity. It is a common sparrow.

## State Ornithologist Resigns to Accept National Work..

Herbert K. Job, for four years State Ornithologist of Connecticut and Lecturer on Ornithology of The Connecticut Agricultural College, announces his resignation of these positions, having accepted an opening to do similar work along national lines. His researches in economic ornithology, particularly in the propogation of game-birds and wildfowl, and his educational work, have attracted wide-spread attention, enlisting the backing of some of the best-known men in America. The National Association of Audubon Societies, the pioneer organization in America for the conservation of wild birds and game, now the strongest and best financed of its kind, has recently organized, under a special fund, "The Department of Applied Ornithology," and has elected Mr. Job "Economic Ornithologist in Charge." This Department will be a national bureau of practical service and information for all who wish to increase, attract, or propagate wild birds or game, instructing applicants by correspondence and supervision, and also through free illustrated Bulletins or pamphlets giving full details of practical method.

Mr. Job began this new work on August 1, and now resigns because he is unable to give to Connecticut more time than to other States. He has



HERBERT K. JOB.

given to this State a large amount of time and effort, which work is outlined in his formal resignation, and more fully in a report about to be issued. It is to be hoped that someone competent to continue this needed public service can be found who is willing to bestow upon it the time and effort necessary to make it of interest and value to the public.

We should never forget that the investigator lives usually in the presence of majorities which do not understand him and that progress is largely conditioned by these majorities.—Dr. R. S. Woodward.

# THE STARRY HEAVENS IN DECEMBER

## THE HEAVENS IN DECEMBER.

BY PROFESSOR ERIC DOOLITTLE OF THE UNIVERSITY OF PENNSYLVANIA.

December, the first of the winter months, is signalized by the entrance of the magnificent Dog Star, Sirius, into the evening sky. This beautiful, bluish star, the brightest star of the entire heavens, will be seen just emerging from the ground in the southeast to remain shining brightly in the southern sky throughout the winter months, until it finally withdraws toward the end of March.

The wonderful apparent brightness of this star is largely due to its nearness to us, for it is by no means the largest or the brightest of the stars. It is, in fact, but three times as massive as our own sun, though it is thirty-three times as bright, revolving around it in a period of fifty years is a dull, but equally massive, companion which emits but one twelve-thousandth part as much light as the brighter star of the pair. Just as Dean Swift imagined and described the two inner moons of Mars long before they were actually discovered, so Voltaire, in 1752, in his imitation of Gulliver's Travels, spoke of a great satellite revolving about Sirius on which his hero lived. The companion was actually discovered mathematically in 1884, and was first seen with the telescope in 1862.




Figure 1. The Constellations on December 1, at 9 P. M. (If facing south, hold the map upright. If facing east, hold East below. If facing west, hold West below. If facing north, hold the map inverted.)

### The December Stars.

Above Sirius, the brilliant Orion hangs high in the southeast, within whose borders the wonderful nebula and clouds of stars at C, Figure 1, the red star at E, the blue double star at D, and many other interesting objects well repay observation with a small telescope. Above and to the left of Orion, the Twins, the bright Capella, the Bull, and the Lesser Dog Star (at F), now make the eastern heavens a most brilliant sight. Below the Twins there this month enters the evening heavens the very faint group, Cancer, of which the curious star cluster, at G, is an interesting object in a small telescope. This small cloud of stars, known as the Praesaepe, or Beehive, is easily visible to the naked eye as a faint patch of nebulous light, while in the telescope it is seen to be composed of about one hundred and fifty stars. It is thus a very inferior cluster when compared to some others in which the stars are numbered by tens of thousands, its more conspicuous appearance doubtless arising from its nearness to us.

The bright planet Saturn, which now shines out with its golden radiance three times as brightly as a first magnitude star, adds also to the brilliance of the eastern heavens. It is now between Gemini and Taurus, in almost the exact center of the Milky Way, and it will remain in this part of the

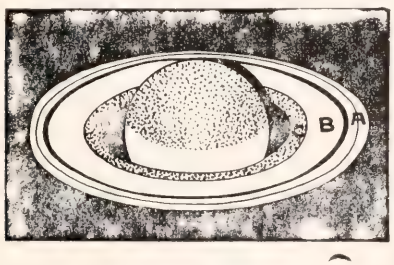



Figure 2. The present appearance of the planet Saturn as viewed in an inverting telescope.

heavens for a long time. By December 1, 1915, it will have moved only to the position S, Figure 1, in the extreme eastern border of the Milky Way, and by this time its southern motion among the stars will have become distinctly noticeable.

### The Planet Saturn.

This beautiful world is now in more favorable position for observation than it will be again for nearly thirty years. For during this month it not only reaches its highest position among the stars, but the sun also reaches at this

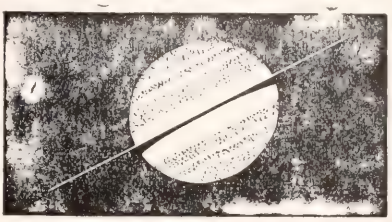


Figure 3. The planet Saturn as it will appear in the year 1922.

time its greatest distance below the equator and so shines most directly on the rings of the planet, which are therefore seen by us brightly illuminated and widely opened out.

Both the earth and the sun are now so far below the plane of the rings that these present the appearance shown in Figure 2. As Saturn moves slowly eastward along the path AVB, Figure 1, it will also move southward among the stars and we will view the rings more and more obliquely. By the year 1922 the planet will have moved down so far that we will be looking at the rings exactly edgewise and they will then present the appearance shown in Figure 3. Finally, by the year 1929, the Ringed Planet will have reached its lowest position among the stars, below and to the right of the point A, Figure 1, and it will then rise far toward the south and remain low in the sky, even when crossing the meridian.

A glass of two or three inches' aperture will show the rings clearly, but the larger the telescope that can be used, the more perfectly is the beauty of this wonderful system brought out. In a moderately large glass it is clearly seen that the rings are made up of three, as lettered in Figure 2; the wide ring, B, is distinctly the brightest and is separated from A by a distinct, wide, vacant space. A similar, but much finer, line divides the outer ring, B, into two parts. But most interesting of all is the Dusky Ring, C, which borders the inside of B and through which the outline of the ball of the planet is clearly seen.

A most interesting observation was made several years ago when Japetus, the eighth satellite of Saturn, happened

to be eclipsed by this system. Neither Saturn nor its rings shine by their own light; they look bright only because they are illuminated by the light of the sun, and therefore they cast a shadow in space. As the satellite entered the shadow of the inner edge of the dusky ring it grew steadily fainter, until, when it entered the shadow of the bright ring B, it completely disappeared. Evidently the ring B is more opaque than either C or A.

It is now definitely known that the rings are a great flattened swarm of little particles, each one of which rejects in the sky. Were he on the equator of the planet he would see them only as a bright, narrow line, spanning the heavens from the east to the west, for there he would view them exactly edgewise. But were he to journey northward, he would see them apparently widen until they formed a most brilliant band across the sky. The apex of this wonderful arch would sink lower in the heavens as he pressed on, until, when he reached a latitude of sixty-three degrees north of Saturn's equator, the uppermost edge of A would sink below the south horizon

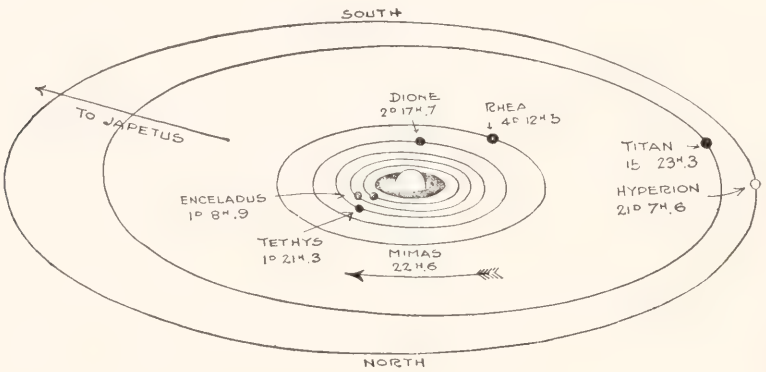



Figure 4. The orbits of the seven inner satellites of Saturn, and the positions of the bodies at 9 P. M., December 1. as seen in an inverting telescope. The time given with each moon is the time occupied by it in completing the circuit of its orbit.

volves around Saturn as a separate little moon. Those on the inner edge of the Dusky Ring make the circuit in five hours and fifty minutes, while those on the outer edge of A, on account of their greater distance from the planet, require twelve hours and five minutes for a single revolution.

Thus the ring by no means turns as a solid mass around Saturn and it can, in fact, be shown mathematically that it would be impossible for it to do so. No known substance could stand one-hundredth part of the strain to which such a solid, turning ring would be subjected, without being torn in pieces. The particles of the Dusky Ring are much more scattered than those of the ring A, while those of the wide, middle swarm are the most closely packed of all.

To an observer on Saturn, could an observer exist there, the rings would appear by far the most wonderful object in the sky. Were he on the equator of the planet he would see them only as a bright, narrow line, spanning the heavens from the east to the west, for there he would view them exactly edgewise. But were he to journey northward, he would see them apparently widen until they formed a most brilliant band across the sky. The apex of this wonderful arch would sink lower in the heavens as he pressed on, until, when he reached a latitude of sixty-three degrees north of Saturn's equator, the uppermost edge of A would sink below the south horizon and he would lose sight of the rings altogether.

But this beautiful arch would only be seen by him while the sun was shining on the north side of the rings. During one-half of the long Saturnian year, which is nearly thirty times as long as ours, the dark sides only of the myriad of particles would be turned toward him. The rings would then be recognized merely as an opaque band, hiding from his view a large part of the heavens. Indeed from the intensity of the shadow which the rings are seen by us to cast upon the ball of the planet, it seems probable that they are sufficiently opaque to obscure the light of the sun itself. If this is so then the imaginary inhabitant while in certain latitudes would be subjected to a total eclipse of the sun which would continue without intermission for more than five years.

Saturn has ten satellites of which the

positions of the inner seven, as seen in an inverting telescope, are shown in Figure 4. The largest one, Tital, is visible in a very small telescope; Japetus, Rhea, and Tethys require a somewhat larger glass, while the two faintest ones recently discovered by photography can only be seen in the largest telescopes in existence. Distinct shadings can now be seen on the planet, but these are continually changing their positions as this distant world turns completely on its axis in the short time of only nine hours and fifty-five minutes.

### The Planets in December.

Mercury, on which unusual interest has centered on account of its interesting transit across the sun on the morning of November 7, will not be well visible during the present month. It reached its greatest distance west of the sun on November 23, and could then be easily seen low in the dawn, but is again drawing near the sun and will pass to the east of that body on January 5. It will then have entered the evening sky, but as it will not attain its greatest distance from the sun until February 6, it will remain also in unfavorable position during the whole of January. On February 21 it will again enter the morning sky.

Neither on January 5 nor on February 21, when Mercury passes the sun, will we again see a transit of this planet. Could we see the planet at the instant of conjunction on January 5, we would see it passing nearly two degrees below the sun, which would then lie between the earth and the planet. On February 21 the planet passes between the earth and the sun, but the inclination of its orbit is so great that it would then be seen to pass nearly four degrees above the sun. There will not occur another transit of the planet until May 7, 1924.

Venus is now in the morning sky, having passed to the west of the sun on November 27. Toward the end of the month it may be seen shining very brightly in the morning sky for two or three hours before sunrise and it is then a beautiful and conspicuous object. It reaches its greatest brilliance on January 2.

Mars is lost in the sun's rays throughout the month; it becomes a morning star on December 24.

Jupiter shines brightly in the southwest, where it is moving slowly eastward through the constellation Aquarius. By December 1, 1915, it will have reached the point J, Fig. 1, and after this for several years it will mount much higher in the sky than it has done during the six years that have just passed.

Saturn is in the western borders of Gemini, Uranus is a short distance west of Jupiter in Aquarius, and the very faint Neptune is now in the evening sky between Gemini and Cancer.

On December 1 the moon will pass over the Pleiades, but as this interesting phenomenon will occur at 3 P. M., it will not be visible to us. On December 28 at 11 P. M. it will again pass the Pleiades but as seen by us our satellite will move a little to the north of these stars and will so not hide them from view. On December 20, at 8 hours 33 minutes P. M, the crescent moon will be seen to pass very close to the planet Jupiter, the upper edge of the moon passing a short distance below the planet. Many observers south of the earth's equator will see the planet hidden at this time. On December 5 at about 11:30 P. M. our satellite will pass over the bright star at H, Fig. 1, and hide this star from view.

The sun will reach its greatest distance below the celestial equator on December 22 at 11 hours 23 minutes, A. M. (Eastern Standard Time); this will therefore be the shortest day of the present year, and at this instant winter will begin.

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### All Are Ashamed of War!

The civilized world has at least arrived at that point of view concerning war, that when it occurs no man and no nation is proud to hail it as a creation of their own. All persistently deny responsibility for its origin. This point was well put in Mr. Bryan's Sunday speech in New York. "The one encouraging thing," he said, "about the present war, is that you can't find a man willing to take the responsibility for it. You can't find a nation willing to take responsibility for it. They are all trying to shift the responsibility. No government will admit that it desired war or caused war."—The Stamford Advocate.

# THE AGASSIZ ASSOCIATION

Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

## Farmers at ArcAdiA.

ArcAdiA, at Sound Beach, was thrown open to the members of the Farmers' Club and their friends last evening, and the occasion was one long to be remembered by the sixty-five persons in attendance. An excellent entertainment was given by local talent. Mrs. William Burke sang a number of old home songs, in which the audience joined. Lester Peck rendered several solos. Miss Emma Colegrove played two violin selections. Mrs. John McWilliams, the accompanist, also played piano solos. A brief but interesting talk on birds and insects was given by Dr. Bigelow, after which refreshments were served. Arthur M. Gale and Coulter D. Huyler were elected to active membership in the club. The next meeting of the club will be held at the residence of Nelson Macy, Lake Avenue, November 16.—"The Daily Advocate."

## Recent Cash Contributions.

| | |
|---|---|
| Mr. Benj. F. Seaver, Brooklyn, N. Y. | $ 1.00 |
| Hon. D. O. Wickham, Cleveland, O. | 10.00 |
| Hon. Zenas Crane, Dalton, Mass. | 25.00 |
| Mr. Charles B. Allyn, Riverside, Conn. | 5.00 |
| Mr. Ellis B. Noyes, Portsmouth, Va. | 1.00 |
| An AA Member | 1.00 |

## Another Monthly Contributor.

Believing that every member of the AA should try to further the work you are doing, I am sending you the first of my monthly contributions for your expenses in connection with the Association and ArcAdiA, and ask that they be confidential, in so far as my name is concerned, and hope to do better next month.—An AA Member.

## Kind Words from a Famous Naturalist.

I want to express my pleasure over the November number of The Guide to Nature. It is a splendid issue, full of good things. I think that the drawing of a robin by Sawyer, on the cover is about the best picture of a robin I ever saw and one of the best bird drawings ever done in line-work.

My hearty congratulations to artist and publisher. With best wishes for your continued success.

Yours sincerely,
Ernest Thompson Seton.

## Marriage of Our Assistant Secretary.

Miss Emma I. Clason, the assistant secretary at ArcAdiA, daughter of Mr. and Mrs. Stephen I. Clason of Sound Beach, was married to Mr. Stuart Morton Potter at the home of the bride's parents on Arch Road at five o'clock in the afternoon on Monday, November 2nd. The ceremony was performed by the Reverend Dr. Lewis W. Barney of the First Congregational Church of Sound Beach.

Miss Clason began as stenographer for The Agassiz Association over four years ago, and has been faithful, efficient and enthusiastic in the work at this office. She knew every detail of the correspondence and took an active interest in all the strange episodes and progress of the AA during these four eventful years. She is much appreciated by the many visitors who have enjoyed her winning and vivacious manner and her clear explanations of what is to be seen at ArcAdiA. She thoroughly understands what we are doing and has the faculty of enlisting the interest of others.

She has been enrolled as a Life Member of the AA. It is pleasing to learn that she will continue as a resident of Sound Beach and will visit us frequently.

### Trout Eat Seeds.

To the Editor: Croghan, New York

Enclosed please find a few specimens for identification. They appear to be seeds, but I am not certain that trout are vegetable feeders.

Sincerely,
G. B. Affleck.

The seeds in your letter appear to be those of some plant of the water lily family.—N. L. Britton, Director-in-Chief New York Botanical Garden, New York City.

Trout are not habitually vegetable feeders and the occurrence of vegetable material in their stomachs is more or less accidental or incidental. Seeds, as well as berries, are not infrequently swallowed, probably "by mistake." Water lily seeds are mentioned in a specific record of stomach contents of trout, and the fish has been taken on a hook baited with blueberries.—H. M. Smith, Commissioner of Fisheries, Washington, D. C.

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### Nature Study In the Schools Is Increasing.

Good news comes from "The Nature-Study Review" at Ithaca, New York, a magazine devoted especially to the pedagogical phases of nature. The September number announces an increase in size. We quote the following:

"Will the members do their best to help proclaim the nature-study idea? The movement is growing splendidly. We see it in the increased demand for Nature-Study courses in the Normal Schools and Teachers' Colleges. There never have been so many students or such enthusiastic ones."

This is indeed encouraging. We too have observed a general increase in nature study, as perhaps any one who has "kept his ear to the ground," so to speak, has done within the last two or three years. As our readers well know, we are not striving especially for nature study in the school, but are really more interested in the study of commonplace nature with uncommon interest by the general public and amateur naturalists, but it is encouraging to note, as we do in this magazine, that the schools are increasing their interest in the delightful work.

### Establishing a Zoo at Prospect Park.

"The Brooklyn Daily Eagle" has been leading a commendable movement by which it hopes to obtain contributions for the purpose of buying the Bostock collection of animals, now in England, where they must be immediately disposed of—the British war authorities have issued an edict to this effect. They are, for this reason, offered by Mrs. Bostock at a low price. Among those taking active part in the project is Professor John J. Schoonhoven, President of the Department of Zoology of the Brooklyn Institute, and well-known to all nature lovers as an enthusiastic natural scientist. Commissioner Ingersoll of the Park is also lending his aid to the support of "The Brooklyn Daily Eagle." A part of the plan is to solicit small contributions from children.

It is well for any community to interest the people in the varied phases of animal life. The larger cities can have menageries and zoological collections, but it should not be forgotten that this part of the Connecticut coast should make available for study all forms of plant and animal life, especially our own common ones. It is indeed well to study the large animals that may be rare or be brought from foreign countries, but it is even better for those who live near to nature, as most of us do in this part of the Connecticut coast, to be well informed on our own native plants and animals. Charity begins at home; so should the study of natural science. Professor Schoonhoven states that the children are much more interested in animals than in plants. That, as a general principle, we believe to be true; occasionally we see exceptions. It is undoubtedly true that city children are almost unanimous in their regard for the large animals of the zoos. It is possible for the city child or man to know more about the hippopotamus from Africa than about the cow in a field of the nearest farm. To know the cow at home is better than to know the "river horse" from Africa.

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The teacher should forage widely and incessantly and bring everything within reach in his field to his class.—G. Stanley Hall.




## Observations and Suggestions—Here, There and Everywhere.

### The Spinning Wheel Magazine.

This represents a new idea in magazine making that should lead the periodical to success not only because the idea is novel and good but because the mind back of it is good. The managing editor is Mrs. Henry Clarke Coe, the associate editors are Messrs. Tudor Jenks and Waldemar Kaempffert. The first number has just been issued by The Spinning Wheel Publishing Company, Incorporated, with the office at Garden City, New York. Mr. Tudor Jenks is the president of the company, but only an assistant editor. His fine literary taste and his legal learning will make him useful in both departments. The magazine is well printed on good paper and is well worth the price of thirty-five cents a copy. It looks as if this were the beginning of an important step forward in magazine making. We are sure that it will be appreciated by a host of readers. It has our best wishes.

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### The Cost of Living is Decreasing.

"Whence has arisen this myth regarding the high cost of living?" was asked by a fellow diner in Dinan's restaurant in Stamford. A clothing dealer replied, "It has not increased. Never in the world could so much clothing be purchased with so little money."

"Never in the history of Stamford," I said, "has so good a dinner been given for thirty-five cents as this restaurant is now supplying. There are soup, an entree, a roast, a liberal supply of vegetables and two desserts all for thirty-five cents. Such a table d'hote is not elsewhere equalled and never has been equalled in Stamford."

This is not the only thing for which the price has fallen. Look at our electric lights. Look at transportation, and compare it with that of thirty years ago. Greater facilities at lower rates and in less time. See too how the time of the customer saves in our well equipped department stores. A home may be furnished luxuriously at a moderate price. Have you ever noticed what wonderfully good tableware is now supplied at a price less than half that of only a few years ago? Even rents are cheaper in proportion to the accommodations. For twenty-five or thirty dollars a home may be secured better than even kings and queens enjoyed not many years ago. Wages are increased and the purchasing power of money has been increased. When we come to books and magazines, consider the club offers and the attractive magazines that may be obtained at low rates. The cost of living has not risen, but the facilities for better living have so increased that the cost of living is apparently higher. If we would live as simply as we lived fifty years ago, we would quickly realize that our present income would yield a bigger surplus, and, by the way, there has never been in the history of the world so beautiful, so big, so excellent, so instructive, so commendable a natural history magazine as THE GUIDE TO NATURE, published at a dollar a year. This magazine twenty-five years ago, with its wealth of illustration, could not have been purchased for more than twice that amount, yet dollars come easier now and faster to most people than they came in those days.

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Your publication is well worthy of the especial consideration of every lover of nature.—H. S. Stebbins, Cleveland, Ohio.

### The World is Full of Interesting People.

During one's travels deeper and deeper becomes the impression that fine people are everywhere. But occasionally he discovers fineness of an unusual character. In the southern part of Indiana, in Tell City, of which not many easterners have ever heard I recently had the pleasure of meeting a big-bodied, big-souled and whole-hearted man who is not only good but good for something. He is at the head of one of the largest chair manufactories of the city. He sells thousands of chairs every year, of a pattern not known in the East. For a reason to me unknown the sales are almost wholly in the West and South. The frame is formed of round sticks, and the seat of splint. The man who sells these chairs has a name as small as he is big. It contains only four letters, F-e-n-n. It would not be necessary to put anything else on our letters to him, because there is only one Fenn, but occasionally, on formal occasions, we put Albert P. in front of it. I do not know when I have met so perfect an example of "a jolly good fellow," so whole-hearted, so kindly in spirit, so jocose by nature, and yet so thoroughly efficient. To me on my first acquaintance he appealed as an unusual type of man. He seemed so jolly, so kindly disposed and his physique is so huge that it made even the writer take second place, and the writer is not a small man. When I expressed my admiration to some of his friends, they said, "You have seen only one phase of him. When he gets into politics he is a born fighter." Then my admiration slid up the scale for at least thirty degrees. Any man who stands for principles that he thinks are worth while must fight for them. The trouble with some men is that they are like the father who told his boy when the boy asked to be paid for doing something good, "See here, son, principle is worth more than money. You want pay for doing good, while all my life I have made it a rule to be good for nothing."

When you meet a man who is really good, worthy, respect for him increases when you find that he is a born fighter along legitimate lines. Some things must be had by fighting, others are obtainable only by loving. Everybody in Tell City appreciates Mr. Fenn. Nothing that the writer can say will add to his honor there. Mr. Fenn is possessed of comfortable supply of this world's goods, but he is rich in better things, for he has drawn everybody to him, except perhaps some stray mortal whom you find in every community who misunderstands the strong man. He is always eager and waiting to help a fellow being and never too busy to do it. He will perhaps be the most astonished man in all Indiana when he sees this laudation in type. My acquaintance with him was for only a short time, but long enough to convince me that he is the type of man that should be plentiful in every place on earth. Many times I was told that he would stop in the rush of his business to do a kind or a charitable act, or to speak a word of encouragement. Everybody appreciates a kind word, but most local publishers wait until a public-spirited man like Mr. Fenn is dead before they speak such words. In Tell City everbody takes Mr. Fenn's kindness as naturally and thoughtlessly as they accept the sunshine. They have always known it, so they seldom speak about it, but even the sunshine should be commended at times. We want to express our thanks for the existence of such a man before the man dies as we suppose he must, although we hope he won't. We should like to be present when he reads these paragraphs, and hear him say: "I declare, I would like to know what possessed that Connecticut Yankee to say such things about me."

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"The *Journal of Heredity*" for September has a short note on an oak (*Quercus insignis*), which the United States Department of Agriculture is introducing into this country. The tree, which is native to Mexico, grows rapidly, attains a height of eighty feet, and bears abundant, edible acorns that are often two and a half inches in diameter and weigh more than two ounces apiece. It is hoped that, either by introducing this oak directly, or by grafting it on our native oaks, or by hybridizing with them, a cheap and valuable food for stock may become available.

### "What Will You Have to Drink?"

Men must have something to drink. In all the talk on temperance and prohibition this important point seems to be overlooked. I hear the reader exclaim, "Why, of course, they must, but are there no water and milk and soda drinks?" Yes, but the average man craves something that gets a firmer hold on the palate, something that has a tang to it. The danger in beer and whiskey is not directly in the drink but in its cumulative effect. If one should take a single glass of whiskey or of beer and never take another, no serious damage would result, but the one leads to another and each lessens the power of resistance. Like sliding down hill it is easy to start, but sometimes difficult to stop. The moral is, do not begin on these cumulative drinks.

Recently I had thrust upon me a realization of the fact that a man may be forced into a saloon. I was stopping for a week in a small town in Ohio where the water is particularly bad on account of its limy hardness. The town had recently voted "dry." I arrived intensely thirsty on one of the warmest days of summer. I went to the most attractive drug store that I could find and asked for a glass of mineral water. None was on sale. I realized, as most men do, that thirst is not allayed by the "soft sweet stuff" sold under the name of soda water. I inquired where I might get some of the bottled temperance soft drinks such as ginger ale and sarsaparilla. The druggist said, "You mean 'pop.' You will find that at the restaurant." A diner in the restaurant said, "That ginger ale is not fit to drink." I agreed with him heartily. My temperance principles are strong, but I could understand the dilemma of any man with less radical principles and in my situation. There was not, in that entire town, a glass of anything fit to drink. I was told that a local factory had put in a cistern to catch rain water, because the water of the town contained so much lime that it encrusted the boilers and made them useless for steaming. No one seemed to care about my personal "boiler," which just then was painfully on duty under high temperature and pressure. My favorite drink is ginger ale; it quenches thirst and has a snap and a tang that gratify the palate of a thirsty man.

At that moment more acutely than ever I realized that it is not enough only to tell men to stop drinking whiskey and beer; something must be substituted.

While I was in that town a famous temperance lecturer arrived. He attracted a crowd in one of the churches. He shouted for votes for prohibition and I agreed with him, but not a word did he say of the subject just then uppermost in my mind. At the close of his lecture he invited questions. I asked, "What do you advise a thirsty man in this town to drink?" "Why, water, of course." "Yes," I said, "but the water here is undrinkable; it is ill tasted; it is injurious even to steam boilers, and my stomach is not stronger than an iron boiler." Then he suggested "pop." "Yes," I said, "if the 'pop' is fit to drink, but this town's 'pop' according to the standard of the eastern man is undrinkable." He could suggest nothing else for a strong man intensely thirsty. Even much of the milk sold in that town was skimmed.

Talk on temperance and prohibition is right, but it should not end with prohibition. Drink is as necessary to the human system as food. The man that puts on the market a harmless palatable drink does work quite as good as the man that gets red in the face and yells for "prohibition."

Practice is more valuable than theory. A commendable promoter of temperance and a good friend to thirsty men is the faithful, hard-working, genial Mr. Gray, known as "Gray Brothers," New Canaan, Connecticut. I have known him personally for many years. He loves his work, he has put his heart and soul into it and produces many a high-class temperance drink. He uses only the purest Artesian spring water; his flavors and spices are as pure. I should like to present every drinker of that despicable "pop" with a bottle of Mr. Gray's ginger ale. That "pop" seemed to be sweetened with molasses and spiced with Cayenne pepper. Its taste suggested such a mixture.

This is not an advertisement for Mr. Gray. It is an honest statement of the sentiments of a hard drinker. The heavyweight man perspires profusely; the body calls for liquid to supply the waste, and the effect is more speedy, more lasting and (not least) more agreeable, for a dainty pinch on the palate, a little puff of fragrance at the back of the Schneiderian membrane. I know nothing, outside of the delicious home water found throughout New England, more satisfactory, more agreeable and more hygienic than Gray Brothers' XXX ginger ale.

I am a connoisseur in ginger ale. It is my favorite tipple. I like Gray Brothers' better than the imported. The ginger, and the sweetness in it are just right.

There are some other drinks really worth while and I often wonder why we northern people leave to our southern friends one of the best of all drinks, limeade made from fresh limes. Limes do not grow in the South, contrary to the belief of many, or at least they do not grow in the parts that I have visited, but the beverage made from them is extremely popular. The limes cost less than a cent apiece and half a lime flavors a satisfying draught. Why are there so few places in which temperance drinks are sold where lemonade may be had at the popular price of five cents? That should give a good profit. The cost for lemon and sugar is not more than two cents.

Good milk from which the cream has not been skimmed is wholesome, and a word might be said in favor of hot drinks, but coffee and tea are narcotics. They are less dangerous than alcoholic drinks, as the narcotic effect is not cumulative. Cocoa is far better than either, and instant postum holds second place. This delicious new drink is by many confounded with its predecessor that took so long to cook. A few years ago I made brave but unavailing efforts to drink postum as a substitute for coffee. I supposed that instant postum was the same thing made instantly, but it is an entirely different thing. Try instant postum and be convinced.

The Baker Cocoa Company in Massachusetts, the Instant Postum Company in Michigan, and Gray Brothers in Connecticut, are not advertising with us, and I do not know that they ever will. I am not trying to advertise them; I am writing of some of the things really worth while, things that in supplying the needs of thirsty men go farther at times than the commonplace argument for prohibition. Here follows my list of practical temperance arguments in the order according to their importance in which I would place them. They are the result of successful practice and of long experience. It is a pity that Gray Brothers' ginger ale is limited to local consumption. Its use should become world-wide. Everybody in Fairfield County knows it, but I should like to see it shipped to all parts of the country and supplant the "pop" and especially that awful narcotic sold at soda fountains under the recommendation that it lessens or prevents fatigue. Of course it does. So does laudanum and chloroform. Here are the great drinks of the country, and strong arguments for prohibition.

NATURAL DRINKS.

1. Pure spring water such as New England supplies is the best in all the land. The public supply water of Greenwich and Stamford is as good at most times of the year as is any bottled spring water.

2. The second best natural drink unquestionably is milk. If you have milk delivered from a good dairy, fortunate are you.

MANUFACTURED DRINKS.

3. Gray Brothers' XXX ginger ale first and only. It takes the lead of any that I have ever tried, and I have tried so-called ginger ale in every part of the country and many brands brought from abroad.

4. Limeade. Strictly speaking, this is not a manufactured drink, but a homemade mixture of natural products.

5. Lemonade. This is almost as good as limeade, but must take second place. I agree with the southern judgment rather than with the northern in this respect.

6. Hot drinks. Cocoa or chocolate. I have yet to try any other that equals that prepared by the Baker Company.

7. Instant postum. This is not only a good substitute for coffee but is *far better than coffee.* It solves the problem of the hot drink that does not

befuddle the brain nor tend to increase the drinker's adipose tissue.

So, my friends, here's "looking at you." Take any of these and you will be on the safe side. Drinking is a pleasure and a necessity. Be thankful that you live in New England where you do not have to drink water from a dirty river as do the people of so many towns. Not until one has traveled through the West and South does there come an adequate feeling of gratitude for the clear, delicious, sparkling water of New England. I wonder why a saloon can exist in New England when these temperance drinks are so plentiful and wholesome. I am glad for more reasons than one that I am a New Englander and especially glad that I live not far from New Canaan.

---

### Sea Food is Good.

Most people admit that sea food is good but there are few restaurants supplying such food extensively and there are fewer supplying it exclusively every day in the week. Even New York City has had but few such restaurants, and those were as a rule down town.

Recently an ideal, moderate priced, sea food restaurant has been established at 305 Fourth Avenue (formerly Horton's near Twenty-third Street) where one can get good quality sea food properly cooked.

Just think of this, and then go try it. Clam chowder, an entire lobster, dessert and drink all for forty cents. For only ten cents additional, one may also have raw oysters or clams. Instead of the lobster there is a wide choice of other delicious sea foods. Who says that the cost of living is high when such a menu is obtainable for forty cents?

This is not an advertisement, but simply a merited word of appreciation. The managers of the restaurant will have their first knowledge of this notice when they read it in this print. We commend them for their enterprise, and advise our readers to visit this popular restaurant the next time they go to New York. The sign is "Reynolds' Campus." It is two doors north of Twenty-third Street on Fourth Avenue (east side).

### Training for the Hands.

Again and again we have emphasized the fact that it is more important to do things efficiently than to say things correctly. It is right to talk about nature and to express enthusiasm for nature, but any one that can take tools and show his dominion over physical nature by making something really worth while has achieved an admirable position in physical nature study.

The manual training benches supplied with first-class tools and put in the market for many years by Hammacher, Schlemmer & Company of New York City are an admirable present for any boy or girl, man or woman.

---

The latest issue of "The Fauna of New England" published by the Boston Society of Natural History, number twelve of the series, is devoted to the jellyfishes. About one hundred species are listed. Earlier numbers of the set include mammals, birds, reptiles, batrachians, echinoderms, crustacians, and ants.

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The American Genetic Association offers two prizes of $100 each for photographs of wild, native trees. One of these is for the largest nut-bearing tree—chestnut, oak, butternut and the like. The other is for any shade or forest tree not a conifer or nut-bearing. The final object is to secure seed for propagation. Full details of the contest are given in the Journal of Heredity for October, 1914.

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**November.**

Ten thousand leaves
From swaying trees,
Aloft they float on morning's breeze;
The last of greenish velvet's lost,
On Autumn's tongue of hoary frost;
The woodland giants' arms are bare,—
Their dresses tossed to shiv'ring hare;—
Round rural hut,
Drops hick'rynut,
And nervous turkeys gaily strut.

—Robert Sparks Walker.

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**December.**

North-winds that press
Without redress,
Ling'ring woods into nakedness,
Have blown songbirds to distant sky—
The hoary year begins to die!—
And snowbirds herald ice and snow,
The brooklet's face is all aglow;
In grief they wear an icy tear,
For t'sighing-dying-dead old year.

—Robert Sparks Walker.

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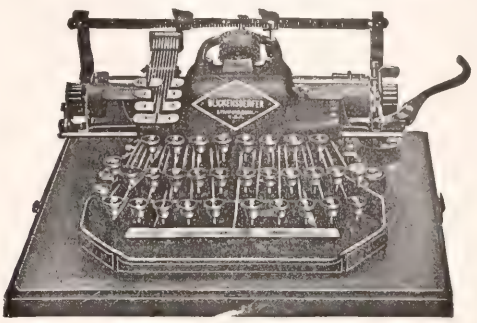
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*(Overheard after a lecture.)*

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ENJOYED it? Ra-*ther,* to the fullest immensity;
Waves of dread wonder surged over my soul.
I seemed to feel joy's overwhelming intensity,
As I heard of that thingum surrounding the Pole.
The What - did - he - call - ems?—those things astronomical,
That gigantic lizard, the—What-was-his name?—
With the—you know, that mummy, who squinted so comical.
'Twas perfectly splendid; I'm SO glad I came.
I'm so fond of science, and dote on geology,
I've bought a new book, "Dr. Smith on Concology,"
Telling of wonderful thing-amy-jigs.
I'd like to be wise and discover a dactyl,
Or go out and hunt for those fishes with wings.
I'd search and I wouldn't give up or come back till
I'd found a big fragment of—what-are-those-things?
Those things that the fellow called Palæozoic,
How ugly they are!—how enormous they grow!
The man who could capture one *must* be heroic,
Because 'twould be awfully dang-rous, you know.
These lectures arouse transcendental emotions,
And make one feel wonderfully learned and sage;
DO call in to-morrow, we'll clear up our notions,
Of how the world looked in the what's-er-name age.
—From "The Catholic Junior."

### Life Histories of Insects.

The New Jersey Entomological Company, 74 Thirteenth Avenue, Newark, New Jersey, has prepared interesting cases to show in the most natural way the life histories of certain insects. Each stage of insect development is labelled so as to make it easy for the teacher to explain to the pupil for the pupil to comprehend. This is good nature study material. Placing it in such convenient form in the hands of teachers merits commendation.

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that said that he would liberally reward the inventor of a new form of entertainment? I should like to know, and so, too, would you, Mr. Superintendent, because we both sympathize with him. We are tired of Xylophones, Bell Ringers, *et id omne genus,* and crave something that shall make greater appeal to our mentality, to our desire to see and to know some of the mysteries of Nature, to something that shall make us think and give us something pleasing to think. about. I have all this ready for you and for your Institute. I call it

## THE BIG LITTLE

and with it I can give you and the Institute an evening that will delight, entertain and instruct. We will enter a world unknown to the majority of human beings, as an universe of the tiniest things nature magnified greatly and directly by the projection microscope. A fly's tongue will be shown one hundred and fifty feet long, the hairs that ornament it become twenty-six feet in length. Plant cells otherwise invisible are eight feet in diameter; living animals less than one-half the size of a pinhead become monstrous giants, startling, amazing, the eye alone of the creature thirty feet in diameter, the most marvellous result of optical projection ever shown in public. As an optical exhibition it far excels that of the best moving pictures. In addition it is new; further, it is unequalled. It will delight as well as instruct.
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## EDWARD F. BIGELOW,

### ARCADIA:

SOUND BEACH, CONNECTICUT.

JANUARY, 1915

# THE GUIDE TO NATURE

VOL. VII. No, 8




EDWARD F. BIGELOW, Managing Editor
PUBLISHED MONTHLY BY
THE AGASSIZ ASSOCIATION, ARCADIA: Sound Beach, Conn.
Subscription, $1.00 a Year; Single Copy, 10c

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Incorrect thinking or absence of any thinking is responsible for much trouble to one's self and others. It is bad for individuals as well as for nations.

Here is an actual occurrence in Stamford's new post office that has plenty of humor and philosophy. "The Daily Advocate" tells the story as follows:

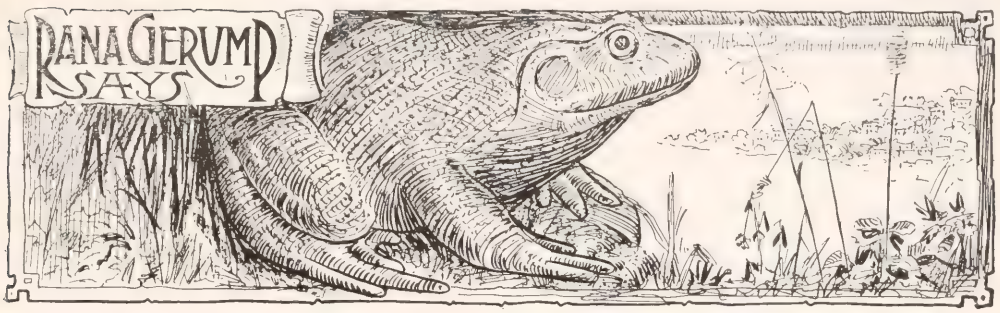
THERE'S A JOB FOR A GLAZIER AND A STUDY IN HALLUCINATIONS.

Elisha Williams, a colored teamster, made the mistake of his young life yesterday afternoon, while in the post office on Atlantic Street. For a few minutes afterwards he was almost as pale as a white man. Williams was writing at the desk near the north wall of the building, having left his team, untied, in front of the building. Glancing up suddenly, he thought he saw the horses running away, and, with one mighty bound, he jumped right into the plate glass window, smashed it into fragments, and stood on the sidewalk, rubbing his head and looking first at the horses, which were standing peacefully in the gutter; then back at the broken window, while those who saw the affair aver that his skin paled perceptably.

To-day, the window, which was about 8x6 feet, was boarded up, awaiting the glazier, for nobody ever made a better job of window-smashing than did Williams. The glass that remained was in pieces, the largest no more than a foot square. Assistant Postmaster Plunkett, who hurried out of his office to see what was the cause of the noise, said to-day that Williams was so frightened that he could hardly stutter, and explained that he thought the window was a door, standing open, in his hurry, as he thought he saw his horses, moving away. There is a platform about a foot high inside the window, but this was unnoticed by Williams as he made his leap.

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An apostrophe to the value of the hen is attributed by an exchange to a philosophical colored man. He said: "Chickens, suh, is the usefulest animal they is. You c'n eat 'em 'fo' they's bo'n, an' aftah they's daid!"




**Observations and Suggestions—Here, There and Everywhere.**

### Looks Like a Good Investment.

In the first three advertising pages of this number is an announcement offering shares of stock in The United German Silver Company of Stamford —factory at Springdale.

A visit to this factory impresses one with the fact that here is a good paying industry that will soon be in active operation, and one that will pay good profit on the capital stock. The metals are in good demand, and the factory is well equipped with substantial modern machinery. The location, the arrangement, the lighting—everything is good. Orders, even in the present financial depression, are ready as soon as the plant is in operation.

The editor of this magazine has been acquainted with Mr. William T. Finney for almost two decades. Mr. Finney is generally regarded as an active, efficient, conscientious, careful, successful business man. It is evident that Mr. Finney regards this business as a thoroughly good investment, and has a high opinion of his associates. We wish him and them all success, and that this good Stamford industry may soon be run to its full capacity.

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### A Decoration by Axes and Saws.

One of the most interesting and attractive window displays to be found in Stamford has been in the spacious windows of The Lockwood & Palmer Company. There a display of attractive wood-cutting apparatus consisting of axes, saws, wedges, etc., has been arranged. As one gazes in that window, he feels a longing to take an ax and start for the woodpile. It would be genuine fun to cut wood with such efficient appliances.

### May Manton's Fashion Book.

A beautiful book of patterns has come to our desk. It is entitled, "May Manton's Fashion Book." The price is only ten cents, reduced to five if purchased with a pattern. Address May Manton Pattern Company, Greeley Square, New York City.

Allen & Smith are the Stamford agents.

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### A Great Addition to Stamford's Beauty.

Everybody interested in busy and beautiful Stamford is delighted with the architectural plans of the new Stamford Savings Bank building in which the bank is now well settled and doing business as regularly and faithfully as if it had been there for a hundred years. This bank was the first in Stamford to erect and occupy a house devoted exclusively to the banking business, although at about the same time the beautiful building of the Stamford Trust Company was erected. Notice has already been called to the building that followed as a close second. The Citizens Savings Bank is notably placed and in a conspicuous location on one of the prominent corners of our beautiful city. It is famous as an institution of high character and financial standing. The building greatly aids in the appearance of the central part of the city.

Nothing has been omitted nor overlooked in the endeavor to make this the most substantial, secure and convenient banking establishment in Southern Fairfield County. It is a marvel of completeness and the perfection of modern banking equipment and service.

The Citizens Saving Bank was first opened for business July 2, 1869. On December 1, 1913, when it occupied its



IN A CONSPICUOUS LOCATION ON ONE OF THE PROMINENT CORNERS OF OUR BEAUTIFUL CITY.'

present quarters, the volume of business exceeded five million dollars a year. At no time during any financial or business depression has the customary rule been enforced that requires sixty days' notice before monies on deposit may be withdrawn. All demands have been promptly met; no one has ever been inconvenienced by reason of unavailable funds. The strength and availability of its resources have earned the confidence of the public and the courtesy of its officers and their loyalty to depositors have gained the cordial



A VERY ATTRACTIVE ENTRANCE.

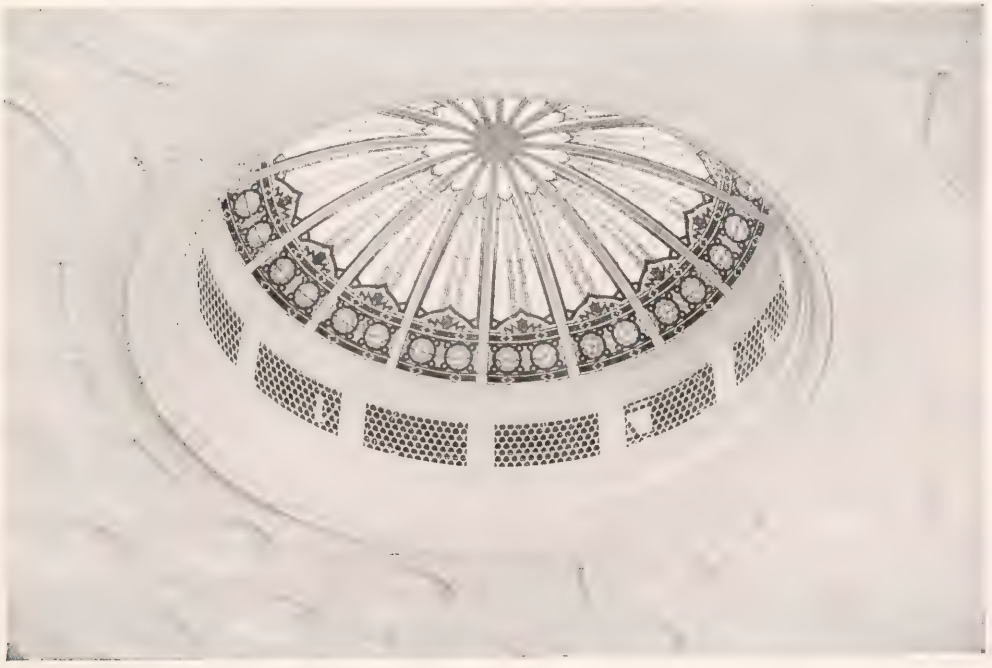


WHERE THE DIRECTORS CONGRATULATE THEMSELVES THAT ALL IS PROSPERING.

good will of the entire community.

The officers of the bank are as follows: William D. Smith, President; Charles D. Lockwood, Vice-President; Walter E. Houghton, Secretary and Treasurer.

The Directors are: William D. Smith, Joseph G. Houghton, Alfred N. Phillips, Joseph R. Swan, Walter E. Houghton, Charles D. Lockwood, Herbert C. Reed, Charles F. Waterbury and Hezekiah Weed.



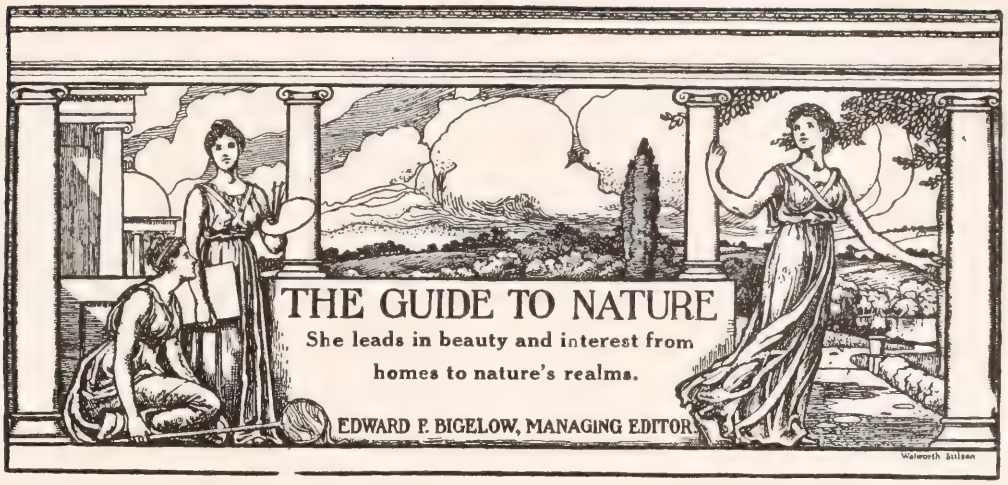
A MAGNIFICENT DOME ELICITS WORDS OF APPRECIATION.



GEORGE PAYNE McLEAN

United States Senator from Connecticut

Cut by courtesy of "Bird Lore"




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut
Subscription, $1.00 a year Single copy, 10 cents
Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII **JANUARY.** Number 8

## Senator George P. McLean.

The one big outstanding figure for bird-protection in the Congress of the United States is George Payne McLean, Senator from Connecticut. There are, of course, many men in Congress who may be depended on to always stand for the conservation of wild-life, but Senator McLean is the one ever on the alert, who rounds up the friends of the birds when times of stress arise. If they are slow in mobilizing, he is the redoubtable Belgian who throws himself into the path of the invaders of the rights of the birds, and holds them in check until the forces of the country can come to his assistance. He has done this sort of thing over and over again. This is the gentleman who is the father of the Federal Migratory-Bird Law, which is so often referred to affectionately as the "McLean Law." It was his speech, delivered on the floor of the Senate last year, in favor of the Plumage Law, that carried the day, and won for America the distinction of being the leading nation on earth in the matter of bird-protective legislation. He is known as "the bird man" of Congress.

Here is an instance that will serve to show his influence with his colleagues:

Last spring, the Finance Committee of the Senate decided to starve the Federal Migratory-Bird Law to death by cutting off all financial support for its enforcement. This action was taken after the House had passed the Agricultural Bill, in which an appropriation of $50,000 had been provided for the enforcement of this measure. The committee was determined that no money should be made available for this purpose. Many of us had made appeals, but all in vain. Senator McLean went before the committee, stated the case forcibly, and asked them to reconsider and vote an appropriation of $10,000. He felt sure that if they would do this he could get the original amount put back when the committee made its final report and the matter came up on the floor of the Senate. Mr. McLean, remember, is a pronounced Republican, and the control of the committee was in the hands of dyed-in-the-wool Democrats. What happened? Just what those who know Senator McLean and his influence expected would happen. The committee gave him the $10,000, and later the Senate made the appropriation $50,000.

The Audubon Association and other organizations may labor with all their might for federal legislation, and do much good in stirring up the country to demand protection for the birds; but Senator McLean, more than all others combined, must be given the credit for actually steering our two most import-

Copyright 1914 by The Agassiz Association, ARCADIA: Sound Beach, Conn.

ant federal laws through the machinery of Congress.

Few persons not members of Congress, or among those who know him intimately, are aware of his great work for the birds. He is modest to a most unusual degree. Perhaps that is one reason why his colleagues esteem so highly his opinion; they know he is not trying to make political capital of his achievements. After he has won a great battle for the birds in Washington, he does not boast of his accomplishments, but straightway gives the credit for his work to others. Here is a typical example: After the Government appropriation above referred to was secured, he sat down and wrote the Secretary of the National Association as follows:

"Too much praise cannot be given to your Association for its assistance in the fight for the appropriation. We carried the Senate by more than two-thirds on both votes. This could not have been done but for the intelligent and timely appeals to senators emanating from the Audubon Societies and friends of the birds throughout the country."

Everybody loves a generous man, and Senator McLean is generous, as well as strong, influential, and powerful. He first entered the Senate in 1911, and, for the good of the birds and the benefit of mankind, let us pray that he may remain there for very many years to come.—Bird-Lore.

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We gain the heaven, not only of feeling and duty, but of intellect and imagination, by hardened muscles and tireless climbing.—Dr. George M. Gould.

## Logging a River Bottom.

BY EDWARD F. BIGELOW.

(Reprinted from "American Forestry," Washington, D. C.)

For some two decades, beginning a half century ago and ending thirty years ago, Big Rapids, Michigan, was one of the famous lumber centers of the United States. Here were the tallest, biggest trees. Here existed the typical methods of lumber cutting of that period. Lumber was so plentiful that it was gathered recklessly. The methods of taking a claim were such as to attract large numbers of lumbermen, and for a hundred miles up the river, the sound of saws and axes was heard on every side, and far back into the country. Logs in a profusion seemingly endless filled the river. They filled it not only on the surface, but they filled the entire river to the bottom of the deepest places in the channel. They were piled in the river in such numbers that logs on top pushed other logs to the bottom, and still others came on top of these, till the river for many miles was, in places, a solid mass of logs.

A year ago last summer, the dam at Big Rapids, Michigan, was carried away. In some eastern places the breaking of such a dam would be followed by an abnormal supply of fish. Old settlers tell of their experience in carrying off fish by the wagonload and the cartload; but here was revealed to the present generation the amazing fact that the entire bottom of the river was a matted mass of logs. When the dam broke, great was the astonishment



THE RIVER BANK IS LINED WITH LOGS.



THE LOGS LINE THE RAILROAD TRACKS AS WELL AS THE RIVER BANK FOR MILES.

at the sight of that thick floor of logs. The Muskegon Lumber Company bought from the original owners their rights and began the removal. The work of taking the logs from the river bottom has been done until logs line the banks to a width of many rods and for long distances, a lumbering scene that must rival the busiest scenes of the lumber camps that existed more than thirty years ago. The logs were water-soaked, but in fairly good condition. The accompanying photographs show one section after the lumber company had been at work for several months. Unfortunately no local photographer seemed to appreciate the picturesqueness and the novelty of such an astonishing sight. No photographs of the scene at its best are obtainable.

Old-timers of Big Rapids become loquacious and tell of the interesting scenes of the time when the "river hogs," as the waders were called, made things lively in that town of mushroom growth. It was a mecca for all kinds of workers in logging, but especially for those who were skilled in setting loose huge piles of logs to float down the stream. These logs would often become wedged together, when a skilful "river hog" could, with a cant hook, remove the keystone log and let the immense heap go tumbling free with thundering noise and swirling currents, only perhaps to become again blocked in another place.

These old-time residents are interested in deciphering the various marks on the ends of the logs, and in pleasant reminiscence they talk of the "good old times" when such men as "Doc" Blodgett and others were active. It is probable that in all the United States there has never been such novel lumbering scenes, nor such deeds as have been done in this last year in Big Rapids.

Mr. James Gow, of Muskegon, Michigan, is the prime mover in this work. He is and for a long time has been the president of the Muskegon Log Owners' Booming Company. He has been personally able to purchase ninety-six per cent. of all the marks that were used by the old-time loggers on the Muskegon Lake and Muskegon tributaries. At the present time Mr. Gow owns nine hundred and thirty-four marks and controls others.

He and his company have been securing and will continue to secure an almost incredible amount of lumber from the bottom of the river. In the last two years alone he has secured 50,000 logs. Of this astonishing number, 24,000 were raised in the vicinity of Big Rapids. The rest have been taken at different points between Maple Island and Muskegon, where his mill is located. At these points, aside from Big Rapids, the logs are raised by a machine known as a log lifter, which is practically a scow fitted up with the proper machinery. When the dam was removed at Big Rapids the water ran off. It was then a simple matter to haul the logs out of the muddy river bed to the bank, where they are left to dry. A section of these drying logs is shown in the accompanying photographs. An enormous number has already been removed. It is almost impossible to ascertain what can yet be done. A capable and conservative man who has investigated the matter does not hesitate to say that there are more than 600,000,000 feet of logs in this stream and its tributaries. No one knows what may yet be obtained from the small river Manistee. Some state that more than 40,000,000 feet have already been raised. It is said that some of the islands are founded on a mass of logs that extend to an unknown depth.

What careless accounting there must have been, to allow 600,000,000 feet of lumber to become stranded in the river with nobody even to attempt to recover it, or perhaps even to know of it. The owners of these thousands of logs must in those days have known of the shortage, but they seem to have been satisfied if they secured 75 per cent. and left 25 per cent. to vanish. Such recklessness is suggestive of the wholesale slaughtering of the wild pigeons. At one time flocks of pigeons were so numerous and so crowded that they consumed a whole day in passing over a given point, and darkened the landscape. Such great flocks were caught in nets and slaughtered by the thousand as food for hogs. The pigeons have been exterminated; and a shortage in lumber is beginning to be felt.

Old-time lumbermen tell of characters once famous among them. One particularly is cited in a cordial way as




ALL THE RIVER LOGS BEAR THEIR OWNER'S IDENTIFYING NUMBERS OR MARKS.



FROM RIVER BANK TO SAWMILL.

Hundreds and hundreds of carloads have been taken from the bottom of the river and shipped by rail to the sawmills.

Dr. Blodgett, commonly known as the "Doc," a nickname given to him when a young man. Long ago he was laid away to rest with other prominent lumbermen, such as Ryerson, Hill and Charles H. Hackley, who accumulated upwards of $9,000,000. Few people have done more for a city than Mr. Hackley has done. He did philanthropic work for Muskegon on a grand scale, and left by his will more than $2,000,000 for the establishment of libraries, hospitals, art gallery, training schools and other things of public benefit.

Mr. Hackley was the first man to erect a monument to President McKinley.

Probably the credit for the first suggestion of this novel method of raising logs from the river bed belongs to Mr. John Torrent, who is yet living at the age of eighty-two years and is still an active man. He interested Mr. James Gow, of Muskegon, Mich., in the proposition, after he had been in the lumbering business for more than thirty years in partnership with Mr. John Campbell. In the year 1912, Mr. Gow bought out Mr. Campbell's interest with this proposition in view and says that he feels well pleased with the plan.

The old lumbermen, with possibly a few exceptions, came to Muskegon when they were young, and having plenty of energy and brains, lifted themselves from poverty into financial prominence. A story of those exciting lumbering days would not be complete without mention of Jonathan Boyce. He, with others, overcame many obstacles in those pioneer times. One that Mr. Gow had to contend against was the claim that, because these logs have lain for so long a time in the river with apparently no ownership, any person had the right to salvage and keep them. One sawmill started in to cut up some of these logs without securing any right or title, but Mr. Gow got ahead of them by buying up the marks from the heirs and then fought the matter in the courts. In 1908 Mr. Gow was successful in the supreme court of Michigan, winning a suit that firmly established his claim to logs bearing marks that he owned, and he now has the entire right of way in this novel lumbering from the bed of the rivers.

The astonishing fact is that the lumber produced from these logs is of pretty nearly as good quality as when they were first cut and for some purposes equally good

# THE STARRY HEAVENS IN JANUARY

## The Starry Heavens in January.

BY PROFESSOR ERIC DOOLITTLE OF THE UNIVERSITY OF PENNSYLVANIA.

Throughout the past year one or more of the bright planets could always be seen shining in our evening sky, but the year 1915 will be far less favored in this respect. The very beginning of the new year is marked by the withdrawal of Jupiter, leaving us with only the beautiful and interesting Saturn, and this planet will move steadily westward, finally entirely withdrawing from the evening heavens in June. Then, for nearly three months, no bright planet can be seen in the evening, but by the end of the year all will have re-appeared; Venus and Jupiter will then shine low in the west, while Mars and Saturn will be seen in the east, in interesting contrast to the empty months of midsummer.

In the new year there will also occur the very least number of eclipses that is ever possible. On February 13 and also on August 10 the moon will pass across the face of the sun, but at both of these times our satellite will be so distant from us that it will appear too small to completely hide the sun. Even at the middle of the eclipses the bright edge of the latter will be seen, apparently encircling the black ball of the moon, and thus forming what is known as an Annular, or Ring, eclipse. Even these eclipses, which will be of small scientific value, will be wholly invisible in America; they will only be seen from regions of the earth southeast of China and northeast of Australia.

But the ever changing face of the sky, as season follows season, and the constellations appear successively in the east, is filled with its tens of thousands of objects of interest, and these might well absorb the time of a student of the heavens, even if the occasional phenomena occurred more frequently than they will during the coming year.

## The Planets in January and During 1915.

Mercury passes to the east of the sun and becomes an evening star on January 5; it will reach its greatest distance from the sun on February 6, and toward that time may be detected low in the southwest soon after sunset. It will reach a similar position in the evening sky twice more during 1915, once on May 31, and once on September 27. The elongation of May is by far the most favorable of the three, for at this time the planet will be far north of the equator and will set an unusually long time after sunset.

Throughout January, Venus rises about three hours before sunrise and may be seen at this time shining very brightly in the southeastern sky. It attains its greatest brilliance of the year on June 2 and its greatest distance from the sun on February 6. After this latter date it will approach the sun again, not, however, passing this body and entering the evening sky until September 12. By the end of the year it will set two hours after sunset.

Mars is far too near the sun to be observed during January; not until April will it have mounted high enough in the morning sky to be in good position for observation. The motion of this little world during the year will be most interesting. It will run eastward no less than two-thirds of the way around the entire celestial sphere, crossing the equator in April, passing through Pisces in May, below the Pleiades in July to the east of the Twin Stars in September, and finally arriving in Leo, just east of the star Regulus, by the end of the year. On May 1 it will rise at 3 A. M., on July 1 at 2:30 A. M., on September 1, at 1 A. M., and by the middle of December at 9 P. M., thus having entered the evening sky. All through the year Mars will be rapidly approaching the earth, its

distance decreasing from 225,000,000 to 76,000,000 of miles, so that its apparent brightness will greatly increase; by the end of the year it will shine with three times the brightness of a first magnitude star.

Jupiter is now just leaving the borders of our evening map though it will not pass to the right of the sun until February 24. It will re-enter the evening sky in the east toward the end of August. During the year it moves slowly eastward through Aquarius, following the path shown in Figure 1.

The path of Saturn is also shown in Figure 1. This interesting world will remain in our evening heavens until June 28 and will again re-enter them toward the middle of October.

The faint planets, Uranus and Neptune, move slowly eastward throughout the year, the former remaining near the center of the constellation Capricornus and the latter on the extreme western borders of Cancer.

On January 2, at 1 P. M., the earth will be nearest the sun, their distance apart at this time being only 91,338,000 miles. On July 5, at 4 P. M., this distance will be more than 3,000,000 miles greater; this will be the instant of our greatest distance from the sun during the coming year.




Figure 1. The Constellations on January 1 at 9 P. M. (If facing south, hold the map upright. If facing east, hold east below. If facing west, hold west below. If facing north, hold the map inverted.)

## The Recent Appearance of Encke's Comet.

This most interesting comet has received unusual attention during the past few months because its approach at this return was a very favorable one, carrying it high among the stars of the northern sky. On September 17, at which time it was first re-discovered photographically, its position in its orbit was such that as seen from the earth it appeared among the stars in the position A, Figure 1. By October 1 it had reached the point B, and by October 20 it attained its highest position among the stars, at C. Seven days later it was nearest the earth, and

from this time its apparent motion westward became very rapid, so that it reached D by November 1, and was soon afterward lost in the rays of the sun.

The path followed by this little comet is smaller than any other known

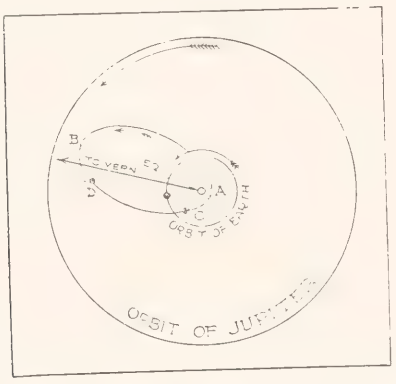



Figure 2. An attempt was made to photog.aph the comet at D.

comet's orbit. It is so flattened that when the comet is at A, Figure 2, it is but 3,000,000 miles from the sun and when it is at B it is 380,000,000 miles distant; three-fourths of the distance of Jupiter. On October 27, when the comet was nearest the earth, it was at C, and was then but 27,000,000 miles away. It reached the point A, nearest the sun on December 5. The comet completes the circuit of its orbit in three and one-third years.

When photographed in September, the comet was found to be fainter than the fourteenth magnitude, and hence only visible in the very largest telescopes. Even when nearest us in October, it appeared merely as a round, faint, nebulous patch, with a thin, thread-like tail, the object being very much too faint to be seen with the naked eye. The true diameter of the comet at this time was about 150,000 miles.

The interest of this small and inconspicous comet arises wholly from the fact that it is peculiarly disturbed by some unknown cause in the course of its journey around the sun. Instead of making its circuit with perfect regularity as all other known periodic comets do, it is continually moving faster and faster. From 1819, when it was discovered, until 1860, it arrived at each return about two and one-half hours ahead of time; during the next ten years it gained one and three-fourths hours at each evolution and at present each period is about two hours shorter than the preceding one. Altogether, it has gained in this way about fifty-six hours since its discovery.

Whatever it is that disturbs the motion of this little cloud, it is probably met with while the comet is pursuing that part of its orbit which is most remote from the sun. It is here that the zone of little planets known as asteroids are found, and it is possible that beside the hundreds of these bodies which we can see there may be in this region of the Solar System a band of asteroidal dust, through or near which the comet passes at each revolution.

When the comet was last at the point D, Figure 2, very nearly at its greatest distance from us, an attempt was made to photograph it with the very powerful reflecting telescope at Mount Wilson, California. After long exposure, an object resembling the comet was found on the plate, so that we now have strong grounds for the hope that, after this, the position of the comet among the stars can be photographed at successive points entirely around the orbit. It will then at once appear whether the observed disturbance is produced suddenly, and if so in what part of the orbit the disturbance occurs. This will go a long way toward removing the mystery of the unseen disturbing body whose effects have for so long a time been a puzzle to astronomers.

### The Stars in January.

This month witnesses the entrance of the brilliant Leo, the last of the winter groups, into our evening sky. This will be found low in the east, its brightest star, Regulus, forty light years distant from us, marking the end of the handle of the beautiful Sickle, which by May becomes so prominent an object in the evening skies.

South of the Sickle, the head of the Water Snake will be seen emerging from the ground, though the long body will not be fully risen in the early evening until next May. Still farther south is the brilliant Sirius, thirteen times as bright as Regulus, while

above this are Orion, Taurus and Gemini, the brightest groups of all, and still higher is the very brilliant Capella, now almost exactly in the zenith.

Now is the best time of the year to trace out the winding River, a long

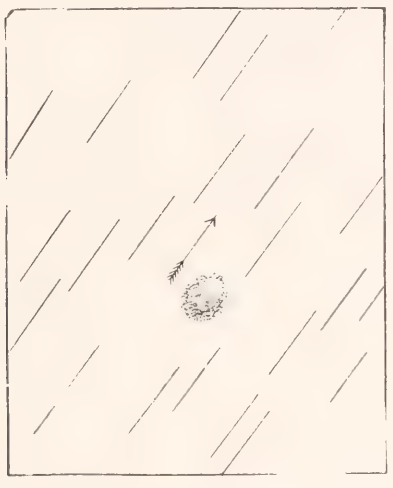


Figure 3. From a photograph of Encke's comet taken October 30. The plate was moved to follow the comet during the exposure. As this was moving in the direction of the arrow the stars in the vicinity were photographed as bright lines on the plate. The great length of these trails indicates the very rapid motion of the comet.

constellation whose beginning is marked by a brilliant first magnitude star, too near the South Pole to be seen in our latitudes, and which flows upward to the Rigel of Orion, which marks the south of the stream. Crouching at the feet of Orion is the interesting group of stars known as the Hare, while below this is the Dove, both of which figures, lying so far south of the equator, are now in their most favorable position for observation. In the western borders of Lepus is the remarkable crimson star known as Hind's Variable, and, in fact, this whole region is filled with beautiful double stars and other objects of interest to the possessor of a small telescope.

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### Water Lilies.

There are pearls of price on the lake's calm breast,
With a glint of gold where they flash in the sun;
In their emerald setting, what royal gems
Can compete with these, ere their race be run?

Emma Peirce.

### Astronomy, One of the Cleanest and Purest of Sciences.

To know astronomy as it should be known, at least a small telescope is required. Yet even with unaided eyes much of interest may be seen, but still more with a field glass. The writer has recently carefully investigated telescopes, and has become convinced that the instrument may be procured with advantage from W. Watson & Sons, Ltd., London.

Our readers may think that the present time is not favorable for importing a telescope from England, but upon careful investigation we have ascertained that the war will make no difference with the firm of W. Watson & Sons, Ltd., in the matter of astronomical telescopes. They have a good supply on hand. The risk of shipment is slight because this is borne by the British Government on all British ships at a nominal sum, varying from time to time, but at present amounting to only about two per cent. of the value. It is not a difficult thing to import a telescope. There is a satisfaction in having one especially imported for the user. The duty is about forty per cent., but telescopes may be brought into the country duty free, if for the use of educational institutions.

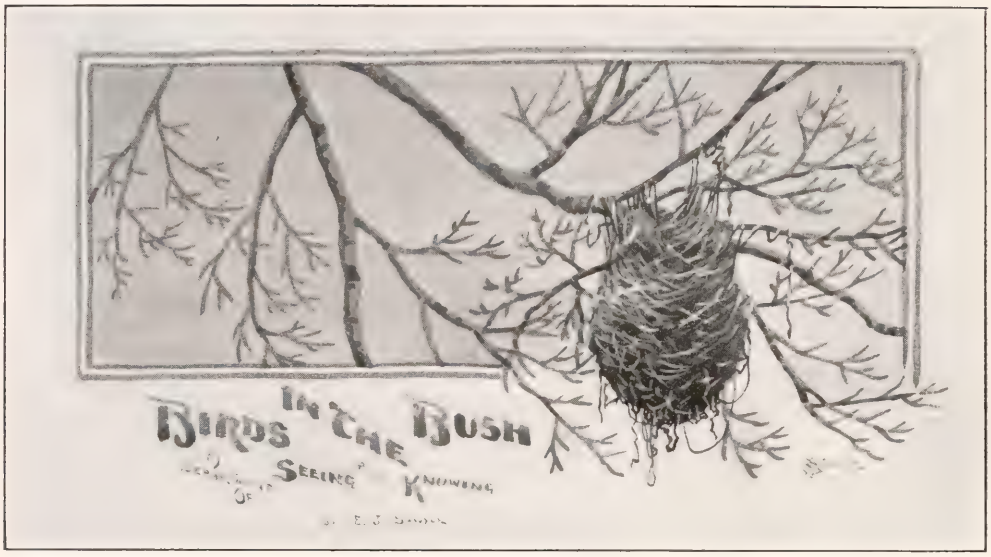
Our readers are cordially invited, even urged, to address this London firm for catalogue and full particulars. Note the low prices. A three-inch telescope may be obtained for only eighty-seven dollars and sixty-six cents. See other prices in their advertisement. These telescopes are first-class in every respect and afford our readers a rare opportunity to obtain a good instrument at a moderate price.

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For killing ants in lawns is recommended potassium cyanide, a half ounce to two gallons of water, sprinkled with a watering pot on the hills.

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The suggestion comes from New South Wales that the Australian opossum might with profit be introduced into the United States. The creature, which is very different from our opossum, is readily domesticated and yields both a palatable flesh and a valuable fur.




BALTIMORE ORIOLE'S NEST.

Correspondence should be addressed to the editor, Mr. Edmund J. Sawyer, 715 Franklin Street, Watertown, New York. Everything in this department not otherwise credited is by the department editor.

### Birds' Nests in Winter.

Birds' nests are still objects of interest although most of their summer charm has vanished. Wind, rain and snow have deprived them of their individuality, and in many cases have left them little more than mere masses of straws, twigs, leaves or cordage; yet even now they may be profitably studied; in most cases they can still be identified. The nest of the majority of species that build in trees will often hang together in a fair state of preservation though the winter. Such are much more easily found than when hidden among the dense green leaves. It is now possible to learn with little difficulty a good deal about the nesting sites preferred by hawks, flycatchers, vireos, warblers, thrushes and many other birds.



NEST OF THE SHRIKE.

It seems needless to state that certain nests, those of phoebes, barn swallows, cliff swallows and many built in tunnels, hollow trees and rails, are wholly intact.

The size and general form, together with the materials, are usually sufficient to identify a nest. Its location is next in importance. Often I have found addled eggs or a fragment of an eggshell large enough to make certain the identity of an old nest. But remember that an eggshell will become bleached when long exposed to the weather, while the spots and other markings will sometimes be washed off.

Small mammals sometimes use old nests as places of shelter and as dining rooms. The white-footed mouse commonly does this. It is not unusual to find a catbird's nest or a thrasher's filled with buckwheat husks or with the shells of hazel or of basswood nuts. Once or twice after brushing away the snow, I have found the mouse himself curled up in his last sleep.

The nests of crows and of large hawks become winter headquarters for squirrels. After filling the nest with dry leaves, under them the squirrel passes many a stormy day. Sometimes he neglects to draw in his tail. Left

fluttering in the breeze, it becomes to the squirrel hunter a tell-tail.

To fetch home some of these nests and pull them apart is interesting. You will discover that there is almost no end to the things that birds will use in the building. It would be easy to name offhand forty or fifty articles, such as fancy lace, newspaper, matches, silver spoons, watch chains, that have been found in the walls or in the lining. I once climbed to a crow's nest, which at the time contained fresh eggs, and found it partly lined by a strong-smelling skunk skin with the hair attached.

Yet many species build with great uniformity from certain materials to which they always adhere. The kingfisher uses fine fish bones as a bed for the white eggs that she lays at the end of her burrow in a sandy bank; the cliff swallow must have a mud house, and nothing else; the humming bird demands lichens and a special kind of natural felt; the orchard oriole insists on a fine, tough grass which makes his pendant cradle a basket. Others are similarly interesting and instructive.

### The Whistling of the Golden-eye Duck.

Watertown, New York.

Dear Mr. Sawyer:—

While duck hunting I have always noticed a whistling sound made by the whistler or golden-eye. Although the sound itself is familiar to all duck hunters none seem to know definitely how the whistling is produced. Will you kindly explain it?

Yours truly,

T. Gladd.

The whistling is produced by the duck's wings. The flight of all ducks is accompanied by a similar sound. It is probably more pronounced with the golden-eye as this species has a smaller expanse of wing than others in relation to the weight of the body. The "whir" of a flying grouse, quail or woodcock



NEST OF RED-EYED VIREO.

is of the same nature. Ordinarily it requires a vigorous, and therefore a resounding, stroke of their wings to propel the comparatively great weight and bulk of their bodies.

### Where Do Wood Ducks Nest?

Watertown, New York.

Dear Mr. Sawyer:—

Please tell me where wood ducks nest. Do they nest in trees? I have heard the question discussed.

Yours truly,

O. A. Severance.

The wood duck nests in the cavity of a tree trunk or branch nor is it the only species of duck which does so. The golden-eye is another tree-nesting species. The wood duck shows a remarkable fondness for a nesting site once chosen, the pair returning year after year to the same tree and cavity which, by the way, may be a long way from the nearest water.

The portrait of Herbert K. Job, published on page 251 of The Guide to Nature for December, was lent to us by the "Saturday Chronical," New Haven, Connecticut.



### Waxwings in the North.

A flock of cedar waxwings is spending the winter in Watertown, New York. On December 3rd I counted twenty-five of these birds in and about a mountain ash tree which was loaded with berries. On the same day I saw and heard a purple finch, and it is not unlikely there are more of these finches in the city. At this season they are gregarious.

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### Why Do Black Ducks Avoid Decoys?

Watertown, New York.

Dear Mr. Sawyer:—

Through THE GUIDE TO NATURE I would like to have explained the habits of our wild black ducks, and especially why they will not decoy as other ducks will.

Respectfully yours,
ARCHIE KIRKLAND.

In its habits the black or dusky is a typical duck of the sub-family of river ducks, which includes the mallard, teal, pintail, shoveler and so on. The members of this sub-family may be recognized by the absence of a web on the hind toe, a characteristic no doubt related to their feeding habits, for their food is obtained in shallow water by tipping or dabbling, and not by diving to a depth. That habit is probably at the bottom of the seeming avoidance of decoys, which are usually placed in fairly deep or at least open water where black ducks would not as a rule go to feed. They like to feed in water a few inches deep among the close growing wild rice and other water plants. They are fond of associating with their kind, and I have not the slightest doubt that black ducks would decoy about as readily as any other river duck to suitable decoys in their ordinary feeding grounds, if placed so as to be readily seen.

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### Birds are Particular as to Sizes.

Greenwich, Connecticut.

To the Editor:—

I want to take exception to something which Mr. Ladd stated in the December issue of your magazine; namely, that the entrances to the martin house are one and seven-eighths inches in diameter. This is an error and should be corrected at once. It should read one and five-eighths inches with another hole directly above of one-half inch to admit light. The martin exactly fits the one and five-eighths inch hole but unless the other one-half inch hole is directly above or at the side, he will not enter, due to the fact that it is dark. A very peculiar point is that the starling will enter a one and four-fifths inch hole but not one and five-eighths inches. This is cutting things very fine. The same applies to wren houses. Anything from seven-eighths of an inch to one and one-sixteenth inches will admit a wren, anything over that will admit a sparrow.

I want to give credit for the above information in regard to martins to Mr. C. H. Townsend whose article referring to the same can be found in "Bird-Lore." The same error was made in regard to the size in that publication and Mr. Townsend told me himself that he greatly regretted the error. It will be corrected in the next issue of "Bird-Lore."

Very truly yours,
RAYMOND B. THOMPSON.

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### The Ways of the Crested Flycatcher.

Hillsboro, Ohio.

To the Editor:—

The crested flycatchers' arrival at their summer home on the fifteenth of May was soon made known by their loud chatter as they flitted among the trees on the lawn. They could not escape the notice of the most unobservant, they were so active, especially in the early morning, in the evening and on rainy days. The birds chased one another among the dense branches of the maples, but a centrally located ash was the favorite. There they loitered or whiled away the time in chattering and in catching flying insects. Having for several years observed the movements of a pair without discovering their nesting place, their greatest secret, what was my surprise when I discovered that they had appropriated a recently made bird box set ten feet from the ground in an ash tree. On June twenty-fourth I heard the piercing cry of the young. Investigation revealed five small birds in a nest composed of grasses, feathers and three small pieces of snake skin. At this time the young birds were probably three or four days old. The

feathers were greyish, with two rows of yellowish, stubby ones on each side of the breast.

To supply the needs of this hungry brood kept both parents busy. The mother bird was more frequent and bolder in bringing food, flying directly into the box, while the male settled first on a dead limb nearby and then darted into the opening. If he became conscious that he was watched, he waited until the intruder had returned to what he considered a proper distance.

On July first the young birds left the nest. By this time their crests were well developed, and the color had become olive green. Unlike most of our birds they remained in the vicinity with their young. In a few weeks the parents resumed their usual life, the young joining in the chase and the chatter. In the early morning, just as dawn is brightening into day, we are awakened by the clatter of the family as they chase one another among the trees. At about eight in the morning they retire to the woods, where they remain until the shades of evening begin to fall, and then return to the lawn.

Every movement that they have made during the whole season has been full of interest to us on account of their obvious enjoyment of life, and their tireless energy in the pursuit of harmful insects.

KATIE M. ROADS.

### President Dutcher Attends Annual Meeting.

The most enjoyable and gratifying incident connected with the Annual Meeting was the presence of William Dutcher, President of the Association. Since the beginning of his illness, more than four years ago, he has been confined almost constantly to his home in Plainfield, New Jersey. It was therefore a great delight to all to see that he had so far recovered as to be able to meet with us on this occasion. Mr. Dutcher attended both sessions, and also a subsequent meeting of the Board of Directors. Although as yet he is unable to speak, it was perfectly apparent to those present that he thoroughly understood all that was going on. The brightness of his face, and the animation of his frequent gestures, indicated clearly his great happiness at being once more among his Audubon Society friends.—"Bird-Lore."

### In the Struggle for Existence.

BY CHAS. VAN LOAN, NEW YORK CITY.

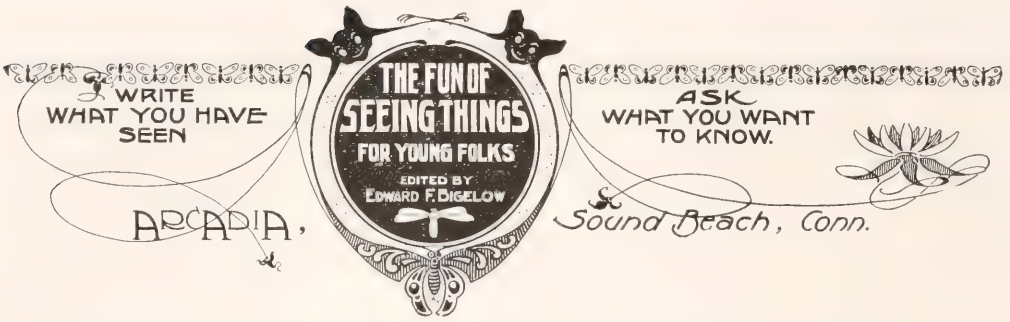
A pair of greatly agitated robins attracted my attention to their nest as I passed down the lane. They were endeavoring with repeated and clamorous darts to drive away a red squirrel that was edging along the bough, plainly intending to wreck another home.

I was at first inclined to drive him away, responsive to an elemental impulse, as I realized the certainty, if I did not do so, that he would succeed in his purpose. But as I hesitated I remembered that he was acting only his predetermined part in nature's complex scheme; that he had as much right to act as he was doing, as those robins in drawing an earthworm from its channeled retreat.

I then observed that there was another matter, equally worthy of notice, just at hand. I saw that the squirrel had as much reason to be on his guard as the robins, for he was in immediate danger from a cat that was cautiously edging toward him on the same bough, a good meal as his object. Perceiving this, and valuing his own red pelt just then above anything else in the world, he forsook the robins' quarters and quickly leaped to safety.

This is a good and unique illustration—illustrative of the struggle for life and food, not only a struggle of the wild things among themselves but augmented by a struggle with our house cat. If a dog had now appeared to pursue the cat it would have amusingly increased the complication.

One reason why the cat did not continue onward after the squirrel had escaped, and substitute bird for beast, was the impossibility of reaching the nest, the bough on which it was placed being too slender. But destructive as cats doubtless are to birds, their destructiveness seems to have a limit when considered in a class, as often you will find a nest directly above the door in an easily accessible place, of the existence of which the cat must surely have knowledge, yet she leaves it alone.




### Tiny Larvae and a Root Cross.

Riverbank, Connecticut.

To the Editor:—

The tiny specimens in the glass dish were discovered by the sharp eyes of my friend, Arthur Johnson, while pass-



THE EGGS AND YOUNG CATERPILLARS OF THE FALL CANKERWORM NOW KNOWN AS *ALSOPHILA POMETARIA* HARRIS.

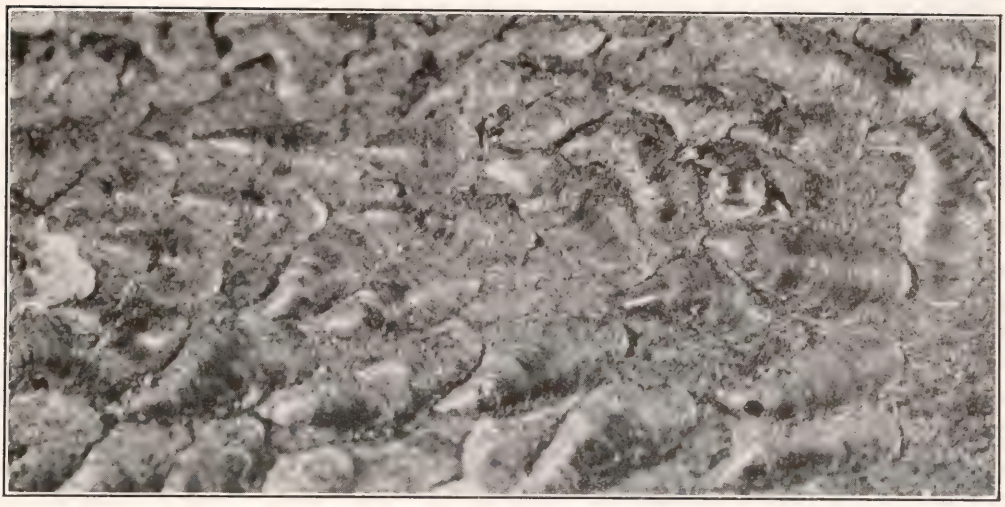
A pinhead at the left shows relative size. Note that the length of each larva is about one-sixth of the diameter of the pinhead.

ing a small oak tree one Sunday afternoon. We suppose them to be one of our common pests but have never noticed them in that stage before and are a little curious. The other specimen of what I presume is scale I found yesterday while digging out gravel in a gravel pit. The tree was close to the edge and the bark looked queer so I investigated.

The large package contains a specimen that I found while digging in the same pit and saved for its sentimental value. On the evening of the Club meeting at your place, when you switched on the lights of the cross in the ceiling, The Agassiz Association meant more to me from that moment than it has ever meant before. That the emblem of the Association should shed light over all who come to study beneath it seemed a beautiful thought to me and especially so when that emblem is a cross. Therefore when I came across these roots twined among



THE OYSTER-SHELL SCALE (*LEPIDOSAPHES ULMI* L.)



THE OYSTER-SHELL SCALE INSECT ON THE TWIG.

the stones of the gravel pit where nature had crossed them in the emblem of an Association that is blazing with light for those who care to learn, I just couldn't help laying them one side to send to you.

Very truly yours,
HOWETH V. MARSHALL.

For the ultimate end of science as well as its initial impulse is the regulation of human conduct. Seeing true means thinking right. Right thinking means right action. Greater precision in action makes higher civilization possible.—David Starr Jordan in "The Stability of Truth."



OBSERVING ROOTS IN THE SPIRIT OF THE SWISS CROSS OF THE AA.

# THE AGASSIZ ASSOCIATION

Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

### Chapter of Louisville Girls' High School.

Officers: President, Elvira Randle; Vice-President, Ruth M. Duckwall; Recording Secretary, Kathryne Sikking; Corresponding Secretary, Dorothy Shelley; Treasurer, Mary Virginia Howard. Number of members, fifty-three.

If it were possible, every girl and woman belonging to the Louisville Girls' High School Chapter of The Agassiz Association would visit you at ARCADIA to personally thank you for the lectures you gave in Louisville this fall. As we cannot do that, we take this means of showing our appreciation of the two free lectures given by you at the Louisville Girls' High School.

Our Chapter has been revivified. New plans of progress are maturing, and interest in furthering those plans has greatly increased. The call of the road now before us is alluring and irresistible.

Every week we go for a walk in some one of the suburbs of Louisville. Our AA Members do not believe in riding any more than is absolutely necessary, and we enjoy the freedom from city traffic. Besides, we want to get as close to the trees and flowers, and little wood people as we can. It is the tree that we intend to learn about this year. Our botany teacher here at the High School points out to us the different varieties of trees which grow in Kentucky. We are learning their names and ways, and their uses. Whenever an especially good specimen of a tree is found we carefully take it from its native home and place it in our specimen case. This is going to be the most important and most delightful study of our hikes. But the flowers, the mosses, the fungi and the ferns are hunted from underneath the dry brown leaves. The berries and the nuts, too, receive due respect and love, and often suffer dire destruction at the hands of the hungry Agassiz girls.



THE LOUISVILLE (KENTUCKY) GIRLS' HIGH SCHOOL CHAPTER.

We thank you that you have said, and taught us to know that, "We love things not because they are beautiful, but they are beautiful because we love them," and The Agassiz Chapter of the Louisville Girl's High School is realizing this great truth.

ELVIRA RANDALL, President.
RUTH M. DUCKWALL, Vice-President.

report to you at regular intervals the progress we are making.

DOROTHY SHELLEY,
Corresponding Secretary.

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**Male High School Chapter, Louisville, Kentucky.**

Officers: President, Harry St. Clair; First Vice-President, Talmage Smock



THE MALE HIGH SCHOOL CHAPTER, LOUISVILLE, KENTUCKY.

Our first meeting was very well attended and the girls were very enthusiastic. We planned a trip to Kenwood, a very charming suburb of Louisville, for last Saturday but as the weather was very disagreeable we postponed it to a more propitious occasion. The study of trees is going to be the object of our next visit to the country, but at this writing it has not been decided as to what section we will visit, although a spot will be selected that will prove to be ample field for our nature studies along the lines suggested.

The officers of the Chapter are determined to make this the banner year, not only from a numerical standpoint, but also in relation to the knowledge to be gained through the facilities afforded by the Association. It is to be hoped that it will be my pleasure to

Peterson; Second Vice-President, Hamlin Wiley; Recording Secretary, Milton Kimbel; Corresponding Secretary, William Baker. Number of members, thirty-six.

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We have already had two business meetings and four outings. We expect to have one meeting a month for business and to discuss various things of interest. We want to have three speakers at each meeting—one outside speaker and two from the school. We will have our outings every Saturday if the weather permits. We have taken in about five new members at the last meeting. Please send me a sample of the AA button as I want to talk this over with the fellows at the next meeting.

WILLIAM M. BAKER,
Corresponding Secretary.

### Breckinridge Chapter, Louisville Normal School, Louisville, Kentucky.

Officers: President, Esther Wallner; Vice-President, Miriam Laub; Recording Secretary, Kate Bodine Stone; Corresponding Secretary, Celeste Dempf; Treasurer, Louise Paslick. Number of members, forty.

The Breckinridge Chapter has been organized as a result of Dr. Bigelow's delightful visit to the Normal School of Louisville, and we hope to do good work as members of the Association who have received special inspiration from his talks to us.

CELESTE DEMPF.

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### Microscopical Queries and Suggestions.

Chicago, Illinois.

To the Editor:—

I often wish that one had some way to find out "spots" of interest when near strange towns or co-workers in one's own subjects. Many valuable moments have been lost in hunting up localities when waiting over for trains, and in other necessary "killing of time." And perhaps THE GUIDE TO NATURE could answer some of the queries put to us in mounting and other microscopical work. Here are a few:

1. What are the best ways of mounting pollen, and is it advisable to stain the grains?
2. How can *pine* pollen be put up to (1) avoid air in cell and (2) differentiate structure in that of the various species of pine?
3. Is there a method of treating fossil diatoms with peroxide of hydrogen instead of acids? I am told that such a method has been published but cannot trace it.
4. Why are scalariform tubes put in the special arrangement observable in microscopical sections of the stems of the fern Pteris?

Such as these and many of them come our way. It is a pity that your journal has no special department in which such queries and answers might be published.

Yours truly,

V. A. LATHAM.

Here is another good suggestion for our members and friends. This magazine is for just such work—to give guidance to all phases of nature. The entire contents are a "department" of nature for all sorts of inquiries—a Clearing House of information. But do not leave it all to the editor!—Ed.

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### Fine Microscopical Slides.

Inquiries have frequently come to this office regarding the mounting of microscopical slides and also where those made by experts may be bought. The best slides that have reached us are from Powers & Powers, Station A, Lincoln, Nebraska. These slides are of the smallest aquatic forms. The technique is perfect, the finest mounting being with such things as Paramaecium, Cyclops and Daphnia.

For larger microscopical specimens the best that we have seen come from J. B. Howard, 45, Frenchgate, Richmond, Yorks, England. He is indeed rightly entitled to be described as an "Expert in Microscopy." Some of his specimens have delighted students and visitors at ARCADIA when these slides have been exhibited by the projection microscope. They also make good photo-micrographs. Some of these will later be shown in THE GUIDE TO NATURE.

Some of our old-time microscopists lament that microscopy as a popular recreation is a thing of the past, but it is pleasing to learn that slides of the old-time excellence may still be obtained and that any one who desires to use the microscope as an intellectual recreation may obtain either slides or lessons in micro-mounting. Correspond with Mr. Howard who is a master in his line.

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E. R. Darling, in the American Journal of Science for September, gives a new method for cleaning diatoms. The details are too complex to be quoted in full, but the device involves boilings in strong hydrochloric and nitric acids, dilute sulphuric acid, and a solution of potassium chlorate with a thorough washing on filter paper after each. The result is a perfectly clean shell, free from all organic matter or foreign substance.

### The ArcAdiA Piano.

A little more than a year ago, through the courtesy of several lady friends of ARCADIA, funds were provided for the purchasing of a piano to be used in the Welcome Reception Room. The plan for entertaining visitors, especially at gatherings in the evening, has been to have three periods of music of fifteen minutes each, followed by an illustrated lecture with lantern slides after the first period, and a lecture with the projection microscope after the second. This seemed an ideal arrangement; to accomplish it, the attention of several good lady friends of the Institution was called to it. We supposed that our troubles would be over when the money had been obtained, but we soon ascertained that they were just beginning. Did you ever try to buy a piano? The different descriptions, and commendations and statements of desirable qualities would have been entertaining if they had not been so puzzling. After visiting almost every piano store in Stamford, and Greenwich, together with several in New York, the difficulty, instead of becoming clearer, became more puzzling.

At last a good idea suggested itself. Instead of visiting the stores, a visit was made directly to the Kroeger Piano Company's factory in Stamford, Connecticut. It was at once evident, even to one totally inexperienced in pianos, that theirs seemed to be just the piano needed for the large Welcome Reception Room. Its tone was sweet and brilliant, yet we decided not to trust to our inexperience, but to consult experts. When the Kroeger was mentioned every one was enthusiastic and said something like this, "Yes, that is a sweet-toned, well-made, piano; you will make no mistake in selecting it for the Welcome Reception Room." Well-informed musicians agreed that the Kroeger is as good as any piano at the same price, and some enthusiastically maintained that it is better. After another visit to the factory to learn what the manager had to say and a return visit, taking an expert to make it ring beneath her nimble fingers, we awaited the decision. This expert said, "There is a piano that would not worry me if I were going to give a musical. I feel that that piano would meet the situation, let me be as difficult to please as I would. I cannot explain this to you," she said, "but there is something about a piano that I call 'response.' Some pianos although well-made do not meet me in my expression. There are some that, while I have no positive objection to them, give me a feeling that they are not quite so desirous as I am to please the audience." She tried several at the factory and was puzzled. "They all are good, but I feel that that particular one has just the brilliancy and expressiveness that you want."

That piano was placed in the Welcome Reception Room. Various accomplished musicians volunteered to assist in these evening entertainments. More than a year has gone by, but we have not said in print one word about that piano and we are not now saying a word in any sense as an advertisement. The Kroeger people will know nothing about this notice until they read it in print. The manager of ARCADIA, who is writing, has a limited knowledge of pianos. He could look upon all as a strictly impartial judge and would feel in honor bound very carefully to investigate the situation at various stores and manufactories, so that the funds entrusted to him should be expended at the best possible advantage, to please the contributors and make our friendly musicians glad to have an instrument on which they can express themselves. **This piano has met the situation.** Some of the best pianists of Stamford and Greenwich have used it, and well-informed critics have been in the audience. The instrument is always ready to respond to the musician's mood, and many an expert has said, "I like to play on that piano. You may call on me at any time that you need my services." The piano has been so satisfactory, after more than a year's thorough test, that we want to say with all possible emphasis that we believe there is not another piano in the market that can be purchased for the same amount of money that will equal it. The tuner has frequently praised the clear brilliancy of the high notes and many an expert has said, "How delightfully that piano responds to the situation."

The piano is wholly paid for and thanks to our musical friends we feel

lot in the slightest obligation to the managers of the Kroeger factory. Our acquaintance with the managers has been limited to two or three calls when we were looking for a piano. We are happy to say that the Kroeger upright is the best that can be purchased at its price. If any other maker or dealer were to offer to remove the instrument and substitute his make that sells for the same price, and do it free of expense for the exchange, we would decline his offer. If you intend to buy a piano, investigate as we did, and if you follow our example you will be as happy as we are in the choice of a Kroeger. The address is Kroeger Piano Company, Stamford, Connecticut.

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The new greenhouses at the University of Illinois, in addition to the customary heating arrangements, will also be connected with a refrigerating plant. By this means, throughout the year, sections can be kept at any temperature desired, for whatever experiment or observation may be under way. Portions of the greenhouses where work on plant diseases is being done can be thoroughly "quarantined" from other parts. Even the humidity of the atmosphere is under control. The special object is the investigation of resistance, immunity, and the like.

**Acknowledgment.**

Credit is due to Doubleday, Page & Company for permission to copy from "Country Life in America" the central part of the frontispiece of our December number, representing a pigeon flying upwards in the loft. Acknowledgment is also given to Mr. Henry Wysham Lanier for courtesy of the photograph.

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**Interest in Domestic Pets.**

Enlist every child's interest in domestic pets and make young naturalists of them as soon as possible. But guard against making them mere collectors of dead animals. It is living not dead biology that quickens the sensibilities and deepens the child's conception of the world. Beware of a person who doesn't like animals; something is deeply wrong with such a person.—Dr. George M. Gould in "The Infinite Presence."

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I have said that sympathy with the whole world of living things is the prime requisite of learning truth. This is true whether the truth be scientific, philosophic, or religious. It is especially so with children.—Dr. George M. Gould.



DR. GEORGE M. GOULD AND DOUGLAS, ATLANTIC CITY, NEW JERSEY.
Dr. Gould is an AA Member and under this picture writes, "Will be on the lookout for you!"



IS THERE, AFTER ALL, A MORE LOVABLE ANIMAL THAN A COW?
The traditional old woman who kissed a cow might have kissed something not so lovable. Quaint old-time saying: "Everyone to his own taste as the old woman said when she kissed the cow." Photograph by Brown & Dawson, Stamford, Connecticut.

Happy is the man who has found his work. There is only one happiness in this little life of ours and that consists in having work to do that one cares to do, and the chance to do it in such order and with such rewards as make life reasonably pleasant, satisfying from the material side. There are no pleasures in life equal to the joy of the worker in his work when he cares for it. Pleasures are at most but passing incidents. The work is what counts.—James J. Walsh, M. D., Ph. D., Litt. D. in "Education, How Old the New."

### A Lover of Birds.

(See Frontispiece.)

Senator McLean is a member of The Agassiz Association, and an inspiration to all interested in the work. We heartily concur in the good wishes editorially extended to him by "Bird-Lore." We also are proud of him because he is Senator from our home state—CONNECTICUT.

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Ruskin tells the story of a race-horse that took sick and only got well when his pet kitten was telegraphed for and put in his stall. He then won the race. —Dr. George M. Gould.

# In Memoriam

ALBERT FERRIS, Sound Beach, Conn.

**Died November 25th, 1914. Aged sixty-three years.**

**An appreciation with personal reminiscences.**

Mr. Ferris was a genuine naturalist, though he would perhaps not admit the application of that term to his liking for Mother Nature, nor would his friends feel that the term properly describes him. But that would be due to a misunderstanding of the word, not of the man. He was a thoroughly good farmer, which expresses the same thing in different form. He loved to live near to nature, and rejoiced in her products. He was especially fond of oxen, cows, horses and other farm animals. He loved pets. He rejoiced in the growing corn, hay and other farm crops. He was one of the few in this part of Connecticut that keep alive the farming spirit of old-time New England. This he did chiefly for the love of it.

One day, some three years ago, he was speaking of the obstacles in the way of really good farming. A listener remarked, "Why don't you sell your farm? It would bring a good price as a summer residence here in this ideal combination of country and seashore. The income from the investment would be more, I should think, than the profit of running the farm. You could take life more easily."

"But," he quickly replied, "that would not give me the farm life. I think I will stick to the old place—it is as good for me as it is for anybody else—so long as I live." And he did, though many people have coveted his home and the picturesque acres surrounding it.

Mr. Ferris was not only physically but in his likes and dislikes a strong man. He was kind-hearted and true. He disliked shams. He possessed a strong spirit of fairness, and an ability to size up situations and people (as he could farm live stock) at their real value.

From the first establishment of ARCADIA in Sound Beach, he expressed a kindly interest in the project in general and especially in it as a Sound Beach



"HE WAS ESPECIALLY FOND OF OXEN."



HE LOVED THE HAYFIELD AND WAS ESPECIALLY HAPPY ON A MOWING MACHINE OR HORSERAKE.

Institution. Some of the first words of encouragement came from him. He was especially pleased by our sympathetic interest in country life and in things near to nature.

When the surprising but now well-known calamity befell us four years ago, he expressed himself strongly in the matter. "You came," he said, "to establish a Sound Beach Institution, and I for one would like you to have a fair show. You deserve something better than to be turned out-of-doors. What can I do for you?"

A few days later, it occurred to the writer that the new ARCADIA would need a large amount of stone for permanent foundations under the eight buildings. The foundations had been mostly piers with boards.

The manager called on Mr. Ferris and said that a few loads of stone would be gratefully received, and suggested that there might be piles of them in some lot corner that he would be willing to have removed. The reply was, "What! Rubbish stone! You need a wall of good stones. Go ahead and help yourself to anything on these premises, and put your buildings on strong foundations (not piers) where they will stay."

"But that would take an awfully big lot of stones."

"Yes," he laughed, "but that is just what we have here." Then he continued to tell entertainly of the building of stone walls in his grandfather's day, how much harder and longer men worked at that time, what fine oxen they had. He was eloquent.

He took the writer around the premises, pointing out the various stone walls, with the reminiscences that they suggested, and incidentally spoke of different crops in the fields that they surrounded.

One was forced to decide that the best stone for the purpose was in a wall standing near the house.

"You wouldn't want to give those would you?"

"Certainly, if those are the best, then that is where you want to get them."

For many days the heavy teams drove through his yard to that beautiful wall, taking away long sections of it. Then those heavily loaded teams crossed his home mowing lot, cutting deep ruts.

From certain sources, perhaps from misunderstandings, not necessary to be explained here, The Agassiz Association was told to discontinue and was threatened with legal action. Excited, the manager went to Mr. Ferris's home and told him of the trouble.

Mr. Ferris laughed cordially and said, "Now don't get excited nor alarmed. You have enough to attend to. Go back and see that those stones are put in right. I will take care of the loading and the lawyers too."

The carting continued for many a day, and the results, thanks mostly to Mr. Ferris, are to be seen in the splendid foundations under the ARCADIA buildings.

There are many others in Sound Beach that feel as if they had lost a true friend in the death of Mr. Ferris. We desire to place in our printed records and to acknowledge publicly his hearty and extensive support in the restoration of ARCADIA.

### The Death of the Leaves.

It is pleasant to walk over the beds of these fresh, crisp, and rustling leaves. How beautifully they go to their graves! how gently lay themselves down and turn to mould!—painted of a thousand hues, and fit to make the beds of us living. So they troop to their last resting place, light and frisky. They put on no weeds, but merrily they go scampering over the earth, selecting the spot, choosing a lot, ordering no iron fence, whispering all through the woods about it,—some choosing the spot where the bodies of men are mouldering beneath, and meeting them half-way. How many flutterings before they rest quietly in their graves! They that soared so loftily, how contentedly they return to dust again, and are laid low, resigned to lie and decay at the foot of the tree, and afford nourishment to new generations of their kind, as well as to flutter on high! They teach us how to die. One wonders if the time will ever come when men, with their boasted faith in immortality, will lie down as gracefully and as ripe,—with such an Indian-summer serenity will shed their bodies, as they do their hair.

When the leaves fall, the whole earth is a cemetery pleasant to walk in. I love to wander and muse over them in their graves. Here are no lying nor vain epitaphs. What though you own no lot at Mount Auburn? Your lot is surely cast somewhere in this vast cemetery, which has been consecrated from of old. You need attend no auction to secure a place. There is room enough here. The loose-strife shall bloom and the huckleberry-bird sing over your bones. The woodman and huntershall be your sextons, and the children shall tread upon the borders as much as they will. Let us walk in the cemetery of the leaves,—this is your true Greenwood Cemetery.—Thoreau.

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What else but having been brought up with animals and thus learning how lovable they are, will ever eradicate out of fiendish humans the idea that when they have an hour or a day to spare from their work of plundering their fellow-men they must spend it in murdering some animal.—Dr. George M. Gould.

# LITERARY AND BIOGRAPHICAL

**Insect Biographies with Pen and Camera.** By John J. Ward, F. E. S. New York: Frederick A. Stokes Company.

Mr. Ward is an enthusiastic English investigator of all phases of nature, and a skillful user of the microscope and the camera. He has in this book recorded some interesting biographies that we are sure nature lovers will welcome.

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**The American Apple Orchard.** By F. A. Waugh. New York: Orange Judd Company.

Although the apple is perhaps the most widely grown of our fruit trees, and probably more generally known and prized than any other, it is nevertheless a much neglected tree. The agriculturist gives careful attention to everything else ,but in many cases leaves the apple to fight its own battle. Mr. Waugh, an enthusiastic apple grower, knows how to transfer his enthusiasm and impart his knowledge to other people.

**Messmates.** By Edward Step, F. L. S. New York: Frederick A. Stokes Company.

It is interesting to note that a partnership may exist between animals and be distinct from parasitism, or that condition in which one partner lives at the expense and the injury of the other.

There are numerous instances in which two distinct and unrelated creatures are found constantly in close association without cost or loss to either.

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**The American Natural History.** A Foundation of Useful Knowledge of the Higher Animals of North America. In four volumes. By William T. Hornaday, Sc. D. Illustrated by 225 original drawings by Beard, Rungius, Sawyer, and others, 151 photographs, chiefly by Sanborn, Keller, and Underwood, and with numerous charts and maps, with sixteen plates in color. New York: Charles Scribner's Sons.

The original one volume edition of this com-



A Grizzly Bear at Home

From "The American Natural History" by William T. Hornaday, Sc. D.
(Copyright, 1902, by F. C. Wolcott.)



A DRESSED UP CHIMPANZEE.
From "The American Natural History" by William T. Hornaday, Sc. D.

mendable work by one of our most accomplished naturalists has been enlarged to four volumes, has been revised, and the text brought up-to-date. The volumes are profusely illustrated, the type is large and easily legible, the text is entertaining. The publishers have done their part well. They have produced a book to delight the numerous lovers and students of animal life.

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**Behavior of the Lower Organisms.** By H. S. Jennings. New York: The Columbia University Press; The Macmillan Company, Agents.

Natura, maxime miranda in minimis.—Fabricius. (Nature is most to be admired in those works which are the least.)

More and more in recent discoveries in microscopical biology the truth of the old-time saying by Fabricius is becoming evident. Here is a book that sets forth from beginning to end the marvelous qualities of various kinds of microscopic life. In no other work that has come to the reviewer's desk are, for example, the Amoeba and Paramecium so well set forth. After reading this entrancing book, in which one is sure that all observations have been recorded not in fancy but accurately, the reader feels much the same sentiment for these tiny creatures and for others similar that one has after reading modern popular books on birds and quadrupeds. Certainly the Amoeba, however slow of movement, exhibits antics as interesting as those of partridge or of fox. It is astonishing to see how this tiny bit of jelly is adapted to its surroundings, how it rolls along, may be driven along, and how, most astonishing of all, it chases its food, although this pursuit is not done with lightning-like rapidity. The animal has no legs, but it accomplishes its purpose successfully without them.

It is natural to ask the question, "Are these interesting performances the outcome of consciousness?" That the author cannot answer because, as he well says:

"It is clear that objective evidence cannot give a demonstration either of the existence or of the non-existence of consciousness, for consciousness is precisely that which cannot be perceived objectively. No statement concerning consciousness in animals is open to verification or refutation by observation and experiment. There are no processes in the behavior of organisms that are not as readily conceivable without supposing them to be accompanied by consciousness as with it."

The book is designed in the main for advanced students but parts of it are more interesting than a novel and will be read with delight by every one that uses a microscope in the study of those fascinating aquatic microscopic animals.

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**Pets and How to Keep Them.** By Frank Finn, B. A., F. Z. S., Etc. New York: Frederick A. Stokes Company.

This book, like most of our equally good and similar books, is from England, but fortunately it describes many animals that are kept as pets in this country. The author tells us that the chief reason why so few people keep pets as compared with those that keep plants is because the knowledge of animals is not so widely disseminated as is that of plants, and because the difficulties in taking care of animals are greater than with plants; but with proper attention and reasonable knowledge the care of animals, he assures us, affords the greater pleasure.

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**Half-Hours in Southern History.** By Jno. Leslie Hall, Ph. D. Richmond, Virginia: B. F. Johnson Publishing Company.

There are two sides to every question, and from the standpoint of each side, that side is right. The better the North understands the South, and the better the South understands the North, the stronger the country as a nation. It seems late in the day to talk about North or South, yet we fear there are some teachers of civil history in the North who do not fully appreciate the southern point of view. This book undoubtedly will be useful to the southern teacher in inspiring the boys and girls with patriotism for every part of the country, but we believe it will be even more important in leading the northern teacher to see that justice is done to southern sentiment. One does not need to live long in the South nor meet many of the people there before he realizes that many in the North have not in the past done justice to the South, and that the error has not yet been entirely corrected. For a convenient handbook from the southern point of view, I have not seen anything more concise and interesting than this little book. Every true patriot should be proud of the whole country and this book is designed to inspire one with such broad, liberal patriotism. It would be but well for the country's future if this little book should be adopted as a part of the course in history in every northern school.

**The Human Side of Plants.** By Royal Dixon. New York: Frederick A. Stokes Company.

The author has humanized certain well-known actions of plants. He bases his statements upon vegetal characteristics that no one will feel disposed to test. A pertinent question is, Has not the humanizing been, in several instances, too strongly exaggerated and made too sensational to merit commendation, and escape adverse criticism? The harm in such treatment is in the effect on the ignorant reader. It needs to convey a false impression, while at the same time it is telling the truth, a combination that cannot be unqualifiedly praised. A little more self-restraint on the author's part would have improved his book. Still, it brings plants nearer to us when it helps us to realize that they are living things struggling for their life.

**Through the Brazilian Wilderness.** By Theodore Roosevelt. New York: Charles Scribner's Sons.

Colonel Roosevelt is a progressive from the naturalist's as well as the politician's point of view. Few other men could accomplish what he does. Most of us would think that his political activities would be enough to weary any politician and perhaps even his followers, but in addition to those he takes up new and aggressive work in the fields of nature. He goes to nature not for rest but for hard work. When he desires a change he gets it by working a little harder. His latest volume is an inspiration, not only toward exploration of the wild realms of nature but in its attractive literary form and the evidence of his spirit as a genuine naturalist. Many



THE MUSSURAMA SWALLOWING THE JARARACA, OR FER-DE-LANCE, AFTER HAVING JUST KILLED IT.

From "Through the Brazilian Wilderness," by Theodore Roosevelt.

**Fundamentals of Agriculture.** By James Edward Halligan. Boston: D. C. Heath & Company.

The book is edited, not authored. A good notion. Mr. Halligan having obtained from specialists the material for the various chapters of the book, his work has been to combine all in one continuous, stimulating whole. The result is especially well adapted for advanced workers in the study of agriculture. We can also cordially commend it to boys and girls of advanced school grades who are studying the fascinating subject of plant and animal culture in its utilitarian aspect.

geographers doubt as to his new river, and perhaps his readers may doubt even more, but no one will doubt his thorough enthusiasm and wonderful ability to work hard and accomplish much. His account of the exploration in the Brazilian wilderness is as fascinating as any book of the kind that the reviewer has ever read. If Roosevelt were an unknown man, this book would be worth while for its own self. It does not read like a diary of daily events, but the reader feels from start to finish that it has a special theme and that it is advancing toward a definite purpose. The interest is held throughout to the final chapter.

It is interesting to note, from the psychological point of view, that he begins with stories of snakes. One might suppose that the author and especially the publisher as a matter of diplomacy would have selected some other topic. Not every person is attracted by snakes. One of the most interesting chapters is entitled "The River of Doubt," of which the reader has read in many newspapers and magazines.

The publishers have done their part well. The print is large and well leaded. The illustrations are clear, attractive and expressive. We commend the book to our readers. It is not a compilation. It is a real book. It says something new. It is worth reading.



I DID MY WRITING IN HEADNET AND GAUNTLETS.
From "Through the Brazilian Wilderness," by Theodore Roosevelt.

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**Toadstools and Mushrooms of the Country-side.** By Edward Step, F. L. S., New York: Frederick A. Stokes Company.

This is a British handbook intended to help the rambler to identify some of the larger fungi. It will also be useful in this country, as many fungi are common to both lands.

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**Wild Fruits of the Country-side.** By F. Edward Hulme, F. L. S., F. S. A., New York: Frederick A. Stokes Company

An English handbook that will be read with delight by many American readers. A few of the fruits described may not be found in this country, and the description of some others seems not quite to tally with ours, but it is interesting to note what our brother naturalists in England are doing.

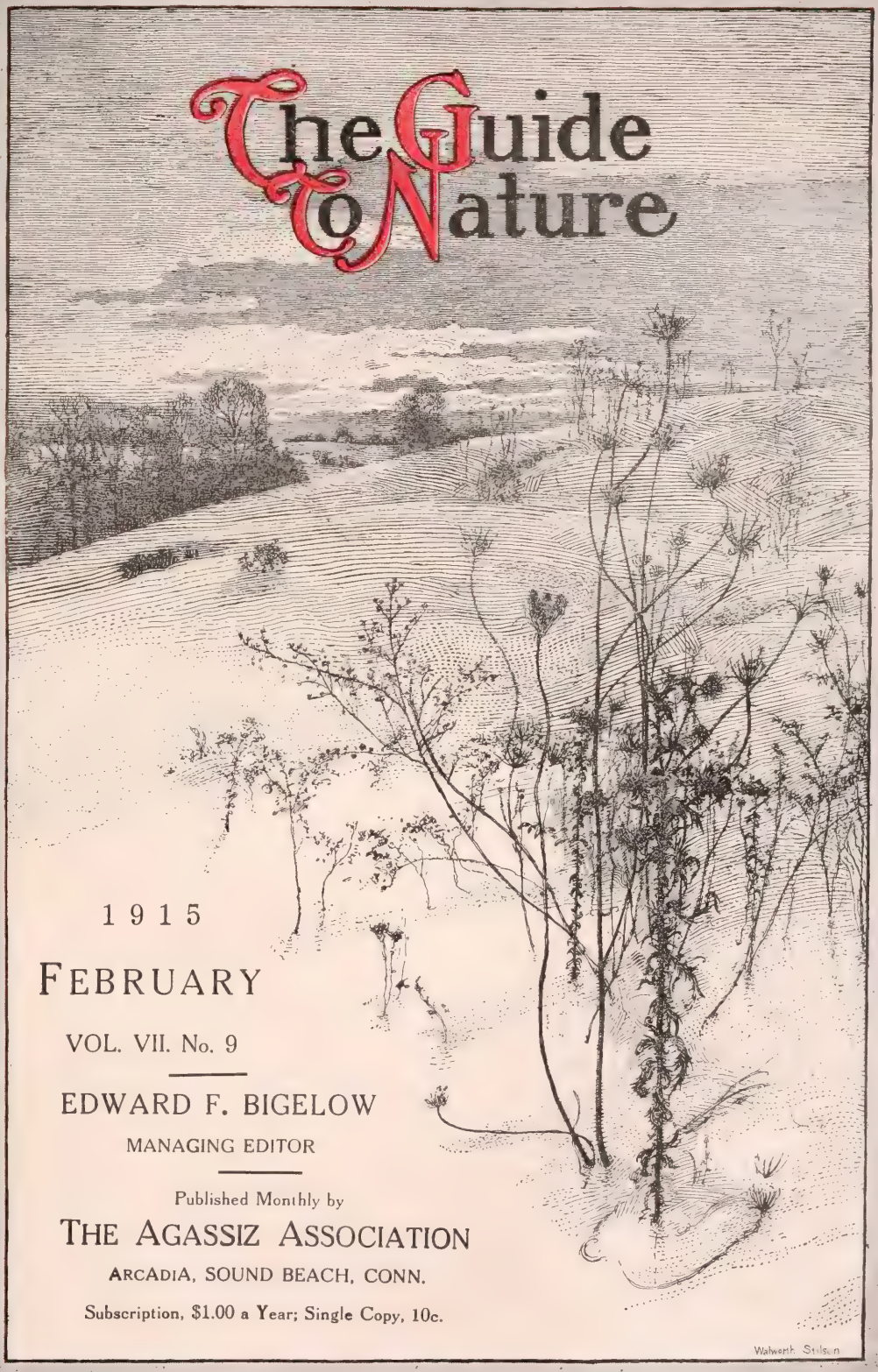
**Texas Nature Observations and Reminiscences.** By R. Menger, M. D., San Antonio, Texas: Guessaz & Ferlet Company.

Dr. Rudolph Menger of San Antonio is well-known to our readers as a contributor to this magazine. He is an enthusiastic naturalist, taking an intense interest in a wide range of nature objects. He is a good example of the rapidly disappearing all-round naturalist, a disappearance due to this age of specialization. Locally he is held in high estimation as a practicing physician; to naturalists he is known everywhere as a persistent worker. The book is permeated by the spirit of observation of insect and other animal life in general and contains a vast amount of interesting matter. It is, however, to be regretted that some of the illustrations in so valuable a book are not sharper and clearer. The reader can but notice that some of the mechanical make-up of the book might be improved, but the spirit is worth more than the letter, and the spirit is here. Dr. Menger shows by text and illustration that a human being, spending only a few decades on this planet, should use his eyes in seeing and in learning about at least some of the myriad forms of animal and plant life with which the planet teems.

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The poorest soul has at least one window opening upon the beyond-the-limited. Most are richer in windows than they know.—Dr. George M. Gould.

# The Guide to Nature




1915

FEBRUARY

VOL. VII. No. 9

EDWARD F. BIGELOW

MANAGING EDITOR

Published Monthly by

THE AGASSIZ ASSOCIATION

ARCADIA, SOUND BEACH, CONN.

Subscription, $1.00 a Year; Single Copy, 10c.

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### Greenwich Journalistic Changes.

"The Greenwich News" and "The Greenwich Graphic" have ceased to exist. Their place is to be filled by one semi-weekly newspaper to be known as the 'Greenwich News and Graphic.' This will be published at the present office of "The Greenwich News" by the newly incorporated Greenwich Publishing Company The company is capitalized at forty thousands dollars. Nelson B. Barton, the former editor of "The Greenwich Graphic" will be editor and business manager of the new publication. We cordially welcome him, and extend to him our congratulations upon his entrance within this larger and more active journalistic field. He will be assisted by his son who is an efficient printer. He will be strongly supported by the new company comprising many of the most influential people of Greenwich.

Mr. Fred W. Lyon, who has been for nine years the editor and proprietor of "The Greenwich News," has bought "The Citizen," a weekly newspaper in Milford. In connection with that paper he will superintend a job printing office. Mr. Lyon is an energetic and genial man who, by his ability, untiring activity and pleasing address, has attained for himself a position of prominence and influence. He has always taken an active interest in ARCADIA, and has been liberal in his treatment of ours and us. From the very first he recognized ARCADIA as one of the important Institutions of Greenwich, and perhaps more than any other journalist, he has been optimistic in regard to its future growth into a great nature university. Indeed, he was the first local journalist to announce ARCADIA'S ambitions in that direction. He has been thoroughly interested in everything that pertains to the welfare of Greenwich, and is himself an ardent lover of outdoor life, especially in its relation to education. For these and for personal reasons, it is with actual pain that the editor of this magazine learns that Mr. Lyon is to leave our town. He will make many friends in Milford, and will extend the usefulness and the influence of "The Citizen." He is an editor and publisher of more than ordinary ability. He is the right type of man to "make good" in any position in which he may be placed.

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### She Set a Good Standard.

The late Mrs. Morris K. Jessup gave five million dollars to The American Museum of Natural History, New York City. The Journal of that institution says:

"This endowment has been welcomed by our own Museum and by all other institutions of the country because of the example and the standard set to public-spirited citizens in other municipalities."

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### Redeem the Human Mind from Error.

Were half the power that fills the world with terror.
Were half the wealth, bestowed on camps and courts,
Given to redeem the Human mind from error,
There were no need of arsenals and forts.

The warrior's name would be a name abhorred,
And every nation, that should lift again,
Its hand against its neighbor, on its forehead
Would wear for evermore the curse of Cain.

—Longfellow.

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No one can be a successful teacher of nature study without a genuine enthusiasm for the subject as no one without a passion for the works of great authors can accomplish the best results in the teaching of literature.—Hough.

# The Chambered Nautilus

This is the ship of pearl, which, poets feign,
Sails the unshadowed main,—
The venturous bark that flings
On the sweet summer wind its purpled wings
In gulfs enchanted, where the Siren sings,
And coral reefs lie bare,
Where the cold sea-maids rise to sun their streaming hair.

Its webs of living gauze no more unfurl;
Wrecked is the ship of pearl!
An every chambered cell,
Where its dim dreaming life was wont to dwell
As the frail tenant shaped his growing shell,
Before thee lies revealed,—
Its irised ceiling rent, its sunless crypt unsealed!

Year after year beheld the silent toil
That spread his lustrous coil;
Still, as the spiral grew,
He left the past year's dwelling for the new,
Stole with soft steps its shining archway through,
Built up its idle door.
Stretched in his last-found home, and knew the old no more.



"THIS IS THE SHIP OF PEARL"—THE CHAMBERED NAUTILUS.

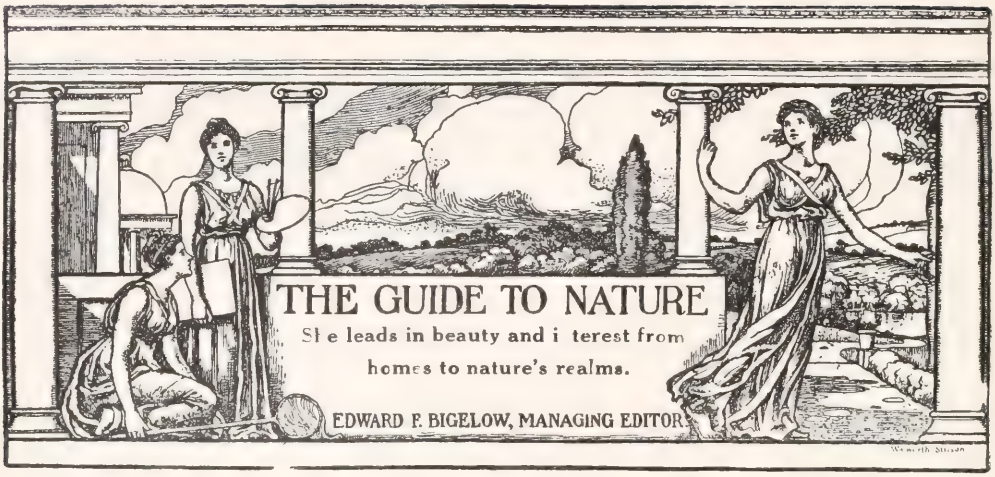


"AND EVERY CELL....BEFORE THEE LIES REVEALED."

Thanks for the heavenly message brought by thee,
Child of the wandering sea,
Cast from her lap, forlorn!
From thy dead lips a clearer note is born
Than ever Triton blew from wreathed horn!
While on mine ear it rings,
Through the deep caves of thought I hear a voice that sings:—
Build thee more stately mansions, O my soul,
As the swift seasons roll!
Leave thy low-vaulted past!
Let each new temple, nobler than the last,
Shut thee from heaven with a dome more vast,
Till thou at length art free,
Leaving thine outgrown shell by life's unresting sea!

—*Oliver Wendell Holmes.*

Published by permission of Houghton Mifflin Company, Boston, Mass.




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut,
Subscription, $1.00 a year Single copy, 10 cents
Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII **FEBRUARY.** Number 9

## Rattlers' Rattles in Art.

An astonishing use of an almost incredible number of rattlesnake rattles has been made by Mrs. Albert Friedrich of San Antonio, Texas. She has obtained thirty-five thousand or more such rattles. She has them in every shape and size, and with these she works for days, selecting them as her art requires and using them in many and varied artistic designs. The work is not unlike that of embroidery except that she employs rattles instead of thread, yarn or silk. She first outlines a pattern and then fills in the details with the rattles. As an artist in oil colors uses strong strokes and deep colors to bring out a design, so Mrs. Friedrich uses large rattles or small rattles, as may be needed to emphasize the outlined pattern. There is no great variety of size and it requires no small skill so to arrange the long and the short, the thick and the thin as to have them fit together perfectly in the pattern. The art requires



TWO INDIAN HEADS—THE MOST TEDIOUS OF ALL MRS. FRIEDRICH'S WORK.

Copyright 1915 by The Agassiz Association, ARCADIA: Sound Beach, Conn.

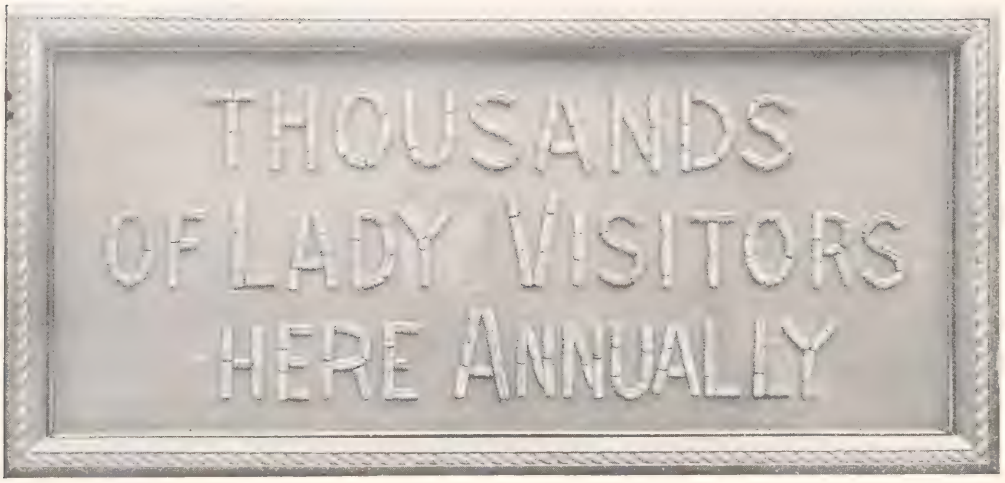
time, patience, skill and keen artistic sense, to produce a design that is a faithful reproduction of the subject chosen. After the outline has been drawn, she generally does this work with the aid of a hairpin as a tool with which to put the rattles in place. The very small specimens are handled with a needle.

When she has chosen the design, she takes a piece of felt, large or small according to the size of the pattern, and on it draws the outline, after which the real work begins. To arrange the rattles on the drawing is not only tedious but laborious, requiring several days' time and the use of many thousand rattles, some of which must be cut to fit in the proper place. Each rattle is lifted from its place on the felt, glue is applied, and the rattle returned to the design. This means the frequent handling of the rattles before the work is finished. After letting the work dry for several days, she applies a coat of varnish. This gives the rattles a brilliant gloss, and brings the design out like a bas-relief carving The work is then placed in a deep frame, covered with glass, and sealed to make it air-tight and dust proof.



"A RATTLING FINE DEER."

One of the designs of which Mrs. Friedrich is proud is that of a deer. She spent nearly four weeks in arranging the six hundred and thirty-seven rattles on this figure, to say nothing of the time used in finishing it. She calls it "A Rattling Fine Deer." A painted background representing a forest with grasses covering the ground was used to make the figure look more natural.




THE LETTERS ARE MADE OF RATTLESNAKES' RATTLES.

Two Indian heads were the most tedious of all her work. She had difficulty in finishing the mouths and noses, but after cutting and splitting the rattles and working for several days she finally succeeded in shaping them properly. She used glass eyes, and the feathers on the head of the squaw were made of a rattlesnake's skin. The bow and arrow and the border are made of rattles.

Mrs. Friedrich's husband has at our request kindly forwarded to THE GUIDE TO NATURE a large number of photographs of her work. From these we have selected the accompanying illustrations. They give an idea of the design, but none of the time used, and none of the skilled labor required. Our selections show the possibilities of artistic expression in this novel embroidery. "The San Antonio Express" says:

"Mrs. Friedrich is very fond of outdoor life and one of her favorite pastimes is hunting. For this purpose she had made a hunting coat of rattlesnake skins. The collar is the only part of the coat she could not make up her mind to have of the snake skin, so she has made this of cloth, as she says it gave her a creepy feeling to have the snake encircle her throat. She has now under way a number of rattle designs and expects to complete many this winter. She spends many evenings and days when the weather is disagreeable planning and outlining her designs. She expects to make a replica of the Alamo in rattles which she says she hopes to finish by spring."

### A Degenerated Rose Blossom.

Every horticulturist knows that the floral organs of any plant, such as the sepals of the calyx, the usually bright-colored petals, stamens and pistils, are all only so many modified leaves, and that under certain conditions leaf-buds can be turned into flower buds, at an early stage of their existence. Thus, by crippling the plants, gardeners force azaleas or camelias to produce flowers from the buds which the plants had intended to produce only leaves. The rose is a particularly good plant in which to trace this development, for it from time to time throws out flowers that fail to attain their normal development, and are nothing more than modified leaves. A bush on my estate has been behaving most irregularly for two years, always sending out freak flowers under certain weather conditions. Sometimes the roses are only half developed, just as if they were cut in two. Last spring it produced several twin flowers, later on some flowers that were lopsided, and on August 3 I noted the branch here photographed, in which the sepals have reverted to their original leafly character, clearly showing the pinnate margin characteristic of the species. The petals, too, although partly colored, were morphologically more like leaves than like the ordinary petals

of a rose. Such phenomena are particularly common in cabbage roses; probably they are connected in some way with excess of nutrition, in many cases at least. Reversions such as the one photographed give striking proof, if any were needed, that flowers are merely modified leaves.—John C. Uhrlaub, Glenbrook, Connecticut, in "The Journal of Heredity" (Organ of the American Genetic Association), Washington, D. C.

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How few have thought of discovering themselves.—Dr. George M. Gould.

### Presence of the Sublime.

One might think the atmosphere was made transparent with this design, to give man, in the heavenly bodies, the perpetual presence of the sublime. Seen in the streets of cities how great they are! If the stars should appear one night in a thousand years, how would men believe and adore; and preserve for many generations the remembrance of the city of God which had been shown.—R. W. Emerson.



THE DEGENERATED ROSE BLOSSOM.
Cut and article by courtesy of "The Journal of Heredity."

### The Plant Chimera Problem.

The *Journal of Heredity* (Washington, D. C.), for December gives over more than half its space to the subject of Plant Chimeras—a problem which after some two hundred and fifty years of spirited controversy among botanists seems at length to be finally solved.



PROBABLE CHIMERA OF RECENT ORIGIN.

Grapefruit from Florida which has apparently thrown out a section of orange. Such freaks are fairly common in all kinds of citrous fruits, and are sometimes explained as sectorial bud sports or variations.

The original chimera was a mythical monster, with a lion's head and a dragon's tail attached to the body of a goat. The modern chimera is a plant, or a portion of a plant, made up of tissues belonging to two different species.

For example, one of the earliest known cases originated in Florence, Italy, in 1644, and was spread by grafting and budding to half the botanical gardens of Europe. It bore at various times a mixture of orange, lemon, citron, and lime, with leaves and blossoms to correspond. Sometimes two or three sections of an orange would be citron. Sometimes, what appeared in all respects to be a lemon was an orange inside. Or, to cite another famous case, *Cytisus adami* often bears on some branches the yellow blossoms of the common laburnum, on others the purple blossoms of the broom, and on still others a new flower that straddles between the two.

Dr. Hans Winkler, of the State Institute of Botany, at Hamburg, Germany, has at last succeeded in producing these chimeras experimentally. He made ordinary "cleft" or "saddle" grafts of tomato and nightshade, each on the other. After the graft had taken and all the wounds were healed, he cut off the grafted branch in such wise as to expose on the cut surface about equal areas of the two stocks.

Naturally, the cut surface promptly grew shoots. When these chanced to arise from nightshade tissue, the resulting stem was common nightshade. When the new shoot grew out of tomato tissue, it was pure tomato. But when the new growth chanced to spring from the division line between the two, then the new plant was tomato on one side and nightshade on the other.

Here, then, was a true chimera.

Some leaves and branches were pure tomato. Some were pure nightshade. But some divided between the two, so that even the two halves of one leaf were unlike.

Dr. Winkler's next step was to get one sort of tissue inside the other. In the end, he succeeded in making a nightshade that had a thin film of tomato spread over it, a somewhat thicker walled tomato that was nightshade inside, and two corresponding tomatoes skinned over with nightshade. In each case, of course, the general habit of the plant, the shape of the leaves, and the main structural features, tend to follow the quality of the inside partner. But the outside surface, smoothness or hairiness of the surface, and the like, are fixed by the other.

Now that the old puzzle of "graft hybrids" is cleared up, various different persons, gardeners and others have gone on to make other curious and interesting combinations. The field is new and open to any amateur. The results of successful experiment are not only interesting or amusing, they may have both commercial and scientific importance.

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The award of the Nobel prizes in literature, medicine, chemistry and physics will not be made this year.

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One of the latest and best works on prehistoric mammals, theory, written by a German professor, composed in German, and printed at Jena, nevertheless draws the great bulk of its material from American authorities and New World fossils.

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**Outdoors.**

Oh, there's much in life that's pleasant—
Books and friendship, of course,
But there's one thing far exceeds them—
To be just outdoors.

Sometime much of fame or money,
In our lap Dame Fortune pours,
But the strength to roam denies us,
And to be outdoors.

Some in foreign lands can travel,
How the mind such treasure stores!
But let me, in my own country,
Simply be outdoors.

Whether bright the sun is shining,
Or a dark cloud threatening lowers,
All the same I love kind Nature
And the dear outdoors.

—Edith P. Hathaway.

**Why a Big Mass of Eggs.**

Few persons who have seen the great mass of jelly which surrounds a clutch of amphibian eggs can have failed to wonder how so large a mass can be contained in the body of one small animal. A recent chemical analysis, however, reveals the fact that the jelly mass is less than the half of one per cent solid, the rest being simply water. The eggs of frog, toad, or newt are, then, when first laid, covered with only a thin film of nearly dry mucus. This immediately begins to soak in water; until in the course



EGG MASS OF WOOD FROG.

of some minutes it expands to about two hundred times its original size. Oddly enough, the egg jelly, if carefully dried without over-heating, can be reduced to its first dimension, and then on moistening, be made to swell once more to its full size.

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A man has not seen a thing who has not felt it.—Thoreau.

# THE CAMERA

ANNOUNCEMENT:—Mr. Charles I. Reid of Millersburg, Pennsylvania, is to edit this department. Correspondence invited.

## Young Owl Photographed At Night.

On account of their nocturnal habits, very few photographs are taken of owls in their wild state, but in this case the photographer succeeded in taking a flash-light of this younger member of the owl family by focussing his camera on the fence post that served as a nightly visiting place for this wise looking fellow. A flash light set off by means of a wire from a set of dry batteries served to take the picture at the vital moment.



THE YOUNG BARRED OWL.

## The Sport of Hunting with the Camera.

To many people the word hunting means but one thing, the killing and destruction of the object of the hunt. The real sport in hunting is not in the killing of wild animal life, but consists of the joy of the tramp through fields and woods and the matching of human cunning against that of wild life. A successful picture of a wild animal or bird is much more difficult to obtain than a correspondingly successful killing, and gives much better satisfaction to both hunter and hunted. It is the keen pleasure of the sport that gives it such a great fascination to all true lovers of nature, for what could give one more pleasure than to search the fields and woods for subjects for the camera and to bring back trophies that will always recall the pleausures of securing them. Then too, the sport can be practiced the whole year 'round, and each season will bring new subjects and interesting changes in the old ones. The photographing of the little animals that inhabit our woods and fields and their nests and haunts requires skill and patience, together with a real love for wild nature. The beautiful nests and eggs of our native birds and the pictures of the parent birds and their young are all subjects that will provide sport fit for kings. The editor of this department will at all times do everything possible to encourage the substitution of the camera for the gun, and will be glad to be of any assistance to others interested in this fascinating sport and method of nature study.

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The thoughts and associations of summer and autumn are now as completely departed from our minds as the leaves are blown from the trees. Some withered deciduous ones are left to rustle, and our cold immortal evergreens. Some lichenous thoughts still adhere to us.—Thoreau.

## Nature Study With the Camera.

BY EDWIN L. JACK, PORTLAND, MAINE.

To me hunting with the camera is one of the most interesting and fascinating forms of nature study. There are no laws to restrict me, and the fields, swamps and woodlands are always teeming with a wealth of bird, animal and insect life that offers countless subjects for the observant camerist.

To get a camera shot at a bird two feet from the lens is, I am sure, a far greater test for one's skill than to get a gun shot at a distance of fifty feet.

Many are inclined to think that to obtain good nature photographs necessi-



YOUNG BLUEBIRDS ON DAY OF LEAVING THE NEST.

tates a large and expensive outfit of high grade cameras and rapid lenses. I have proved that this is not always true, for although I am at present using an anastigmat lens many of my most prized studies were obtained with an inexpensive 4x5 camera and a rectilinear lens. Almost any camera that affords ground glass focussing and an average length of bellows' entension may be put into service.



YOUNG BLACK-CROWNED NIGHT HERONS.

If one cares to try bird photography it is only necessary to add to the regular outfit about fifty feet of such rubber tubing as comes with the ordinary camera bulb. This may be purchased at any store that deals in rubber goods. It comes in strips ten feet long. These are to be joined by small ivory connection tubes which may also be obtained from the same dealer. Also provide yourself with a bulb large enough to actuate the shutter with the length of tubing used.



YOUNG KINGFISHERS TWELVE DAYS OLD.
Note the wing and tail feathers just bursting from the sheaths.



BROODING REDSTART.

An ordinary bicycle pump will answer but is more likely to leak.

The best time for work among the birds is during the nesting season, when with care and patience they may be easily approached. Having found a nest of which you wish to make studies, visit it several days before placing your camera near it, each day approaching a little nearer, until the old birds get accustomed to you. You may then easily introduce a camera and accomplish your object.

Such photographs are more interesting when obtained in series. Picture the nest and the eggs, the old bird brooding, the young when hatched and in different stages until they leave the nest. You can thus illustrate the birds' "home life." To obtain studies of the parent birds in different attitudes as they pursue their domestic duties, focus the camera on the nest, insert a plate and make everything ready as for an ordinary snap shot. Cover the camera with small branches attach the long tube to the shutter, retire to a distance of thirty or forty feet, conceal yourself as much as possible and wait. Soon the old bird will return to feed the young or to brood the eggs, and the camera may then be as easily operated as by the ordinary bulb. In this way many interesting results may be secured. Studies of young birds are always interesting, as they show perfectly the development of the feathers and markings. To picture a number of young birds when they are ready to leave the nest, carefully place them so that one shall have the back toward the



A TIGER SWALLOWTAIL AT LUNCH.



ARROWHEAD, A FLOWER OF THE SWAMP

lens, and one the side. (See illustration of bluebirds.) This will not only remove the set look, but will reveal the markings on both breast and back.

Butterflies and insects make interesting nature photographs. By the use of an ordinary portrait attachment it is by no means difficult to obtain such studies. Always picture butterflies at rest on the flowers on which you know they feed.

For lack of space I have named only a few of the interesting nature subjects available for the camera. When the birds have migrated, when the butterflies and the flowers have vanished, and the fields and woodlands are sheathed in the crystalline whiteness of winter, many pleasant hours may be profitably spent over an album of pictures such as these, and in recalling the adventures experienced in obtaining them.

### A Florida Monster.

Although the palmetto swamps of Florida harbor moccasins, rattlesnakes and other reptiles, a spectacle like that shown in the accompanying photograph is very unusual. The enormous "reptile" is a magnolia tree that has grown into this very unusual shape. Magnolia trees are usually very straight and tall and a freak of any kind is very rare.



"Treed."

It is a very rare sight to see two 'possums up the same tree but in this case the photographer succeeded in fixing the



A MAGNOLIA TREE OF UNUSUAL SHAPE.
Photograph by E. S. Coutant.

scene on his plate. These little animals are very interesting on account of their habit of playing 'possum, which seems to be their chief means of protection from their enemies. However, when not aware of the presence of human beings they are surprisingly much alive and show great agility in climbing trees, seemingly taking great delight in climbing along slender swaying branches.

* * * * *

This photograph is from Z. T. Rawlston, Hixson, Tennessee.

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## Thoughts on a Winter's Night.

BY WILLIAM SHEPPARD SPARKS, CUMBERLAND, MARYLAND.

It is night! and we are far into the wilds. The Spirit of Winter broods o'er all the land. The wind howls through the pines and an owl hoots dismally, deep in the forest. The air is snappy and the stinging wind bites the cheek, and brings with it the resinous odor of the conifers. The snow crunches underfoot with a ringing, metallic sound, while the crust seems almost strong enough to bear us. Pine needles brush into our faces with a tiny prick, as we pass along, giving a stronger whiff of piney odor. Although the moon is shining, its light is scarcely visible here in the thick pine wood. A leaf rattles shudderingly in a nearby tree and we stare into the dark wall of night, to pierce the gloom and see whence comes the sound. A dry leaf skids across the snow and is gone. In the opener spaces of the wood, distant vistas of valleys and hills appear clothed in white.

We near the top of an eminence and come out of the wood on to a cliff overlooking a vast stretch of country. The wind redoubles in force and the pines moan dolefully around us. Below and beyond lie mountains, piled one back of another, gleaming in the soft radiance of a full moon; each tree trunk shows out clear and distinct on the mountain sides, with the exception of the pines, which are compact and dark. And far in the distance the heights melt into the sky. Over all is the blue-black dome of heaven dotted here and there with stars, all faint because of the brilliance of the moon. Clouds lightly heaped float gracefully by, their shadows chasing one another over hill and dale, at times obscuring the light of the moon.

So passes the night until at last the east is faintly tinged with the first, cold rays of the rising sun, heralding the approach of day. Then we must bid adieu, to the night.



CAUGHT AT EXACTLY THE RIGHT MOMENT.
Photograph by W. A. Gordon, Port Dover, Ontario, Canada.

### A Colony of Unprotected Bees.

Occasionally we have reports of bees that do not know enough to go into a natural or an artificial home in sunshine or in rain. A few years ago a swarm of bees made their home on the outside of the roof peak of the Method-



HONEYCOMB OUTDOORS.

ist Church in Portland, Connecticut. They were there for several weeks, "plastering" over much of the white surface of the building and were only slightly protected in the upper part by the projecting peak.

Occasionally the apiarian periodicals publish illustrations of unprotected bees and comb on branches of trees. One of the most remarkable is the accompanying taken from "Gleanings in Bee Culture," and sent to that magazine by Dr. H. A. Surface of Harrisburg, Pennsylvania. The photographer, Mr. Deck Lane of Ebensburg, Pennsylvania, sends a duplicate photograph to THE GUIDE TO NATURE, and writes as follows:

"The 'bee comb' was discovered by Mr. E. G. Miller, about two mues west of Ebensburg, while out fox hunting. It was in a 'clearing' and was discovered in the fall after the leaves had fallen, as the photograph shows. Mr. Miller has previously seen practically the same thing, but never so large and perfect a comb. The view is the east side of comb."

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### A Ferocious Jungle Animal.

San Antonio, Texas.

To the Editor:—

I am sending your great educational magazine an unusual caricature photograph of "a most ferocious looking jungle animal"—the full face view of a Texas wild cat! How was it prepared? Simply by "bad luck" in the



A CAMERA CATASTROPHE.

handling of the original fine negative. The bad luck entered during the drying process after I had used an intensifier solution. The room in which the wet plate was left to dry was not too warm but soon after placing it before a window pane, I noticed that the gelatine was shriveling around the image of the head, but leaving the face parts unchanged.

DR. R. MENGER.

# THE STARRY HEAVENS IN FEBRUARY

By Professor Eric Doolittle of The University of Pennsylvania-

IN the early evenings of this mid-winter month the southern heavens present their most attractive appearance of the entire year. Here we see Gemini, Auriga and the two Dog stars, all very near the meridian, and each at very nearly the highest point it ever attains in the sky, while to the west of left of this very bright region is in its best position for exploration and study. There are a very great many interesting objects here, though the attention of the casual observer is apt to be drawn away from this interesting area by its very brilliant neighboring stars. Thus, for example, nearly everyone is able to recognize the beautiful Dog star Sirius; but a far fewer number are familiar with the




Figure 1—The Constellations at 9 P. M., February 1. (If facing south, hold the map upright; if facing east, hold east below; if facing west, hold west below; if facing north, hold the map inverted.)

these there shine out Taurus and Orion, probably the most striking star groups of the heavens.

It is at this time of the year that the large area of the sky below and to the outlines of the delicate and most interesting constellation formed by Sirius and its numerous, but far fainter, neighbors.

There is so much in this region that will prove of interest to the possessor of

a small telescope that it is, of course quite impossible to mention everything We select a few objects in the Greater Dog, but Lepus, Columba, Eridanus, Argo and Hydra would all have equally well repaid our examinations.

star H is a pale red, and at M, nearly in a line between B and F, but nearer the latter star, there is a faint star which is of deep red color, though neither of these is of so intense a red as the celebrated "Red Star of Lepus," which will be found at N.



Figure 2—The Zodiacal Light

## Interesting Objects in Canis Major.

The white star at A, Figure 1, was known to the Arabs as the "Announcer," because it preceded by a few steps the great Sirius in its passage across the sky; the yellow star at B was the 'Heavy One,' because this star rises but slowly and with difficulty from the ground, while the orange star at C, with several fainter stars near it, was known by the less poetic title of the "Apes."

The star at F is an interesting double in a moderately large telescope; those at B and C can be seen to be double, and that at E can be seen to be triple with a pair of opera glasses and even with so small an instrument as this many other beautiful objects can be found in this constellation, which is a very rich one for such study.

Thus, extending upward to the left of B, between and to the right of K, there is a remarkable succession of faint stars; just below Sirius and to the left of E there is a wonderful star cluster, and there is also a far looser, but still an interesting group of stars directly below H. The stars at D and A are irregularly variable; the latter is said to have totally disappeared in the year 1670, not again being seen for 23 years. It is now fainter than either K or F, though in earlier times it was brighter than these. The

None of these deep red stars are bright. They are believed to be suns, which are in almost the last stages of condensation and are hence surrounded by such a dense cloud of vapors that their light is largely hidden from us. Only the red rays can struggle through the heavy enveloping atmosphere.

The winter branch of the Milky Way, which last month passed exactly through the zenith, has now begun its slow declension toward the west, and by the end of April will be seen bordering the entire horizon from the southwest to the north.

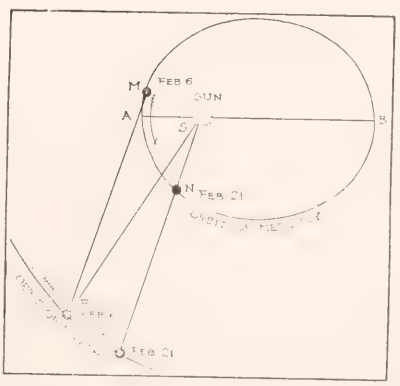



Figure 3—Showing why the present elongation of Mercury is an unfavorable one. (Not drawn to scale.)

## The Zodiacal Light

Toward the end of this month and during the first weeks of March the observer should occasionally attempt to obtain a view of this most interesting object, with which so comparatively few observers are familiar, but which is not at all difficult when the atmospheric conditions are favorable. For this purpose he

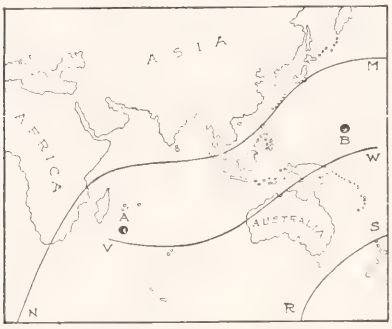



Fig. 4. Regions within which the solar eclipse of February 13-14 is visible.

should go out on a perfectly clear night, as soon after sunset as the sky has become dark, and face the western horizon He may then see a great area of faint light in the shape of a rounded pyramid, the center of whose base rests upon the horizon at the point in which the center of the sun has set, and whose blunt apex may extend upward to the Pleiades, or even higher.

The part of the light which is nearest the sun is the brightest, and it fades away from the axis of the pyramid so that its boundaries are difficult to determine with exactness. Usually this light is considerably fainter than the Milky Way, but it is not aways so; and, in fact, its brightness at times fluctuates in an irregular manner; the cause of this is as yet unknown, but it is believed to be of an electrical nature.

For a long time the nature of this faint light was a mystery, and it was even uncertain whether it was a truly celestial phenomenon at all. But as observations multiplied it became evident that its brightest portion always remained nearest the sun and that as the latter body pursued its apparent annual course among the constellations it carried the Zodiacal Light always with it. It thus became certain that this was a truly solar phenomenon, and not merely an atmospheric one. In fact, we now know that the sun is surrounded by a great, flattened cloud of little particles, within which Mercury, Venus and the Earth are immersed, and that it is the reflected sunshine from this enormously extended, but exceedingly tenuous, cloud which is seen by us as the Zodiacal Light.

The probable position of the boundary of the Zodiacal Light when seen during this month is shown by the dotted line in Figure 1.

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## The Planets in February.

Mercury, which entered the evening sky on January 5, will attain its greatest distance east of the sun on the morning of February 6. For a few days before and after this time it may be seen low in the southwest for about one and one-half hours after sunset. This is, however, a very unfavorable elongation of the planet, because it happens to occur when Mercury is at that point of its path which is nearest the sun. While passing about its orbit, Mercury will reach the point at M, Figure 3, on February 6; at this time the angle S E M, the angle as seen from the earth between Mercury and the sun, will be the greatest. But as the planet will reach the point A but three days later, it is evident that this angle will be an unusually small one at this time.

Mercury will reach the position N, and so pass to the right of the sun and become a morning star on February 21. On the evening of February 1 it will be very near the bright planet Jupiter; it will then lie to the right and above this planet, being separated from it by a distance about equal to the moon's apparent diameter. The two bright objects will then form a most interesting sky figure; but, unfortunately, they will be very low in the southwest and will set soon after sunset at this time.

Venus is still a most brilliant object in the morning sky. It reaches its greatest distance west of the sun on February 6, rising at this time about three hours before sunrise. It is now far below the equator and must therefore be looked for well toward the south of the east point of the horizon.

Both Mars and Jupiter are too near the sun to be satisfactorily observed during this month. The former is in the morning sky, rising but a few minutes before sunrise on February 1, which time is increased to 45 minutes by February 28. The latter toward the beginning of the month sets far toward the southwest, one

and one-half hours after sunset, but it is steadily drawing nearer the sun and will pass to the west of that body and become a morning star on February 24.

Saturn rules the evening skies, and will at once be detected shining out brightly high in the heavens, almost on the border line between Taurus and Gemini. The planet is in excellent position for observation; the rings are widely opened out, and, in fact, of all objects now in the sky, this is the one of most general interest.

Uranus passes to the west of the sun and becomes a morning star on February 1; it will remain lost in the sun's rays throughout the month. Neptune is in the western part of Cancer, in the position shown in Figure 1.

An interesting occultation will occur on February 27 at about 2 A. M., when the moon will be seen to pass over the remarkable cluster of stars at R, Figure 1. This cluster, known as the "Beehive," is composed of about 150 scattered stars from the sixth to the tenth magnitudes, and these will be rapidly hidden, one after another, as the disc of the moon moves in front of them. Unfortunately, however, the moon on this date will be within two days of full, and therefore so bright that the disappearance of the stars can only be satisfactorily viewed in the larger telescopes.

### The Eclipse of the Sun.

On February 13 there will occur the first of the only two eclipses of the year both of which will be wholly invisible to us. The black disc of the moon will first be seen to touch the edge of the sun from the point A, Figure 4, on February 13, at 8 hours 42 minutes P. M. (Eastern standard time); the last trace of the eclipse will be seen from B on February 14, at 2 hours 25 minutes A. M. Observers within the limits of M N R S will see the moon move partly on to the sun; those within the narrow strip V W will see the moon's disc entirely within the disc of the sun; but even from here the sun will not be entirely hidden, and from no region of the earth outside of the area M N R S will any trace of the eclipse be visible.

Both for bodily and mental health court the present. Embrace health wherever you find her.—Thoreau.

### Color, Speed and Age of Stars.

The blue stars are considered to be in early life, the yellow stars in middle life, and the red stars in old age. The Mount Hamilton and Santiago spectrographic observations of stellar motions have shown that stars effectively young are traveling slowly, middle-aged stars more rapidly, and old stars more rapidly still; that is, that the velocities of the stars increase with their effective ages. The average space velocity of the young stars is about eight miles per second, and of the old stars about twenty-two miles per second. Our Sun, which is middle-aged and traveling twelve miles per second, is one of the slow-moving stars of its class.—The Lick Observatory.

### Astronomical Notes.

E. E. Barnard, the astronomer, has been studying comets by means of stereoscopic pictures. By taking prints from negatives made at the same time, but at distant places on the earth, as, for example, at the Yerkes Observatory and at Paris, and combining these, he has been able to view the comet as a solid body in three dimensions and to make out points which do not appear in the ordinary flat view in two dimensions.

Among other points brought out by this device, Morehouse's comet of 1908 appeared at one time to have its tail attached to its head by a slender straight beam. What really happened, however, was seen, in the stereoscopic picture, to be that the tail suddenly ceased to form and began to drift off into space. Then a new and small tail formed, pointing in quite a different direction, and only in appearance joining with the old tail. Moreover, what looked like a thickening of certain parts of the tail proved, when seen in three dimensions, to be a buckling which first formed a spiral, then a ring and, finally, an open cylinder with its end pointing nearly toward the earth.

Recent studies at the Lick and Mills Observatories show that, in general, the nebulae are travelling through space at much higher speeds than are the stars. This fact is not easy to reconcile with the common opinion that the nebulae are evolving into stars. It suggests

rather that such stars as happen to be travelling most rapidly are most affected by passing near to other bodies, and are therefore must often converted into nebulae. Apparently, from these measures stars are changed into nebulae rather than nebulae into stars. But this view when confronted with numerous other considerations appears to be less probable than the other, and in fact there still remain many difficulties and uncertainties in either theory.

Photographs of important nebulae now being made at the Lick Observatory, when compared with those taken some fifteen years ago, show almost no appreciable change in these mysterious bodies. Evidently, therefore, the nebulae must be very distant —and if distant, of a size inconceivably vast.

### New Stars in Recent Years.

It has been shown that the new stars appearing in recent years, that is, stars which suddenly shone out where previously no stars had been known to exist, have been converted into nebulae, and later, in many cases into extremely faint stars of apparently normal condition. As a consequence, the most probable theory of new stars is that they were originally so faint as not to have been included in star catalogues; that they later passed through extensive clouds of resisting materials, such that the collisions on the star surfaces caused sudden increase in brilliancy; and, after passing through the resisting media, that they reverted slowly to their original state.—The Lick Observatory.

### How Far Away are the Stars?

When one looks up at the stars and wonders how far away they are, let him think of this:

If the whole visible universe should shrink down until the earth became the size of one of the periods of this page, one-seventieth of an inch across, the moon would become a still smaller dot, two-fifths of an inch away. The sun, on the same scale, would be twelve feet off and as large as the face of a fair-sized watch, say an inch and a half across.

But the nearest fixed star, another watch face for size, would be six hundred twenty-four miles away. If, then, we let the point of a pencil represent the earth, and the watch of some man halfway across the room represents the sun, Alpha Centauri, which is the nearest star, will be another watch in Detroit.

The rest are still farther off—Chicago, Galveston, San Francisco. Only a few score of these star-watches would be on the earth at all, while some would be as far away as the moon. Thick-strown, therefore, as are the stars in the sky, they are by no means exactly crowded.

### Advantages of Reflecting Telescopes.

The Crossley reflecting telescope established for the first time the tremendous advantage of this form of telescope in the photography of certain classes of celestial objects, such as nebulae, star clusters, etc. To possess reflecting telecopes became at once the ambition of many observatories and astronomers. Reflecting telescopes more powerful than the Crossley are now in use by, or under construction for several of the leading observatories. It is through the use of these instruments that some of the most striking advances of present day astronomy are made.—The Lick Observatory.

### Astronomical Interest.

James Lick's gift of a great telescope and observatory announced in 1874, and the frequent reports of progress made by the builders, created widespread interest in astronomy, especially in California. The many observatories, public and private, established in California in following years, owed their inception chiefly to this interest.—The Lick Observatory.

The familiar theory that sun spots are vast tornadoes in the solar atmosphere is farther corroborated by a recent discovery of G. E. Hale's that similar sun-storms on opposite sides of the equator rotate in opposite directions, precisely like the cyclones, tornadoes and hurricanes of the earth.

The Lick Observatory reports the discovery of a new, and ninth, satellite of Jupiter. The motion is retrograde and the period about three years.

# SEEING BY AID OF THE LENS



Edited by Dr. V. A. Latham 1644 Morse Avenue, Rogers Park, Chicago, Illinois.

### To Our Readers:

It seems as if the time has come for an expression of opinion from our kindly readers of this little pioneer magazine. What is it you wish to ask about in these columns consistent with its objects for study? Our aim is to help and encourage **bona fide** workers, to bring together friendly discussions, to offer exchanges in material, a medium of exchange in pamphlets, journals, books, instruments and ideas, and not to overlook the tyro, neither to be too elementary for the research worker. Will you, Reader, kindly put a few ideas together and give us your encouragement—your help, both mentally and financially? Speak a word to your friends and let us in the old spirit of good comradeship "get together" so our friends can find us, with the latchstring ready and a cheery welcome in this New Year.

To many it is a season of sadness. Who has not friends in this world-wide calamity of war? No matter on what side they be, their sorrows are ours. To one and all we pray God it will soon end, and out of all trouble may a clear sky come bringing higher thoughts and ideals with the calm serenity of Peace for All-time!

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### To Clean Glassware.

Take equal parts of a six per cent solution of sodium hydroxid, and a two per cent solution of calcium carbonate. Boil slides and covers in this mixture for one minute. Rinse in cold water and wipe. (Abe H. Kapman. Journal American Medical Association, Jan. 9, 1915. P. 168.)

### Wonders of a Pool.

After long confinement to the house, whether from illness or an unusual pressure of engagements, how delightful to turn out for a stroll in the fresh pure air! Unheeded whether it snow, rain or shine, if a naturalist of a true stamp, all around seems to welcome him, and care and trouble for the time fly far away. It was early in the morning, recently, that, in urgent need for a breath of fresh air, we started for a walk. Rain had fallen heavily during the night, and the air was reeking with moisture.

One trouble was present: What shall I say to the readers of THE GUIDE TO NATURE?" What will interest many of them—some like one and some another topic? So on in a meditative mood we walked, till our thoughts turned to the teeming abundance of the lower orders of vegetable life, and the important part they play in the grand scheme of life on our globe. So after a long thought I ventured to say, "Even winter is no drawback to our pool, ditch or pond. Break the ice, take home a jar full of vegetation, mud scraped off the bottom; put it in a north light and not too sudden change of temperature, keep it covered, turn it around, and if growth begins by a brown or greenish scum on the sides remove to a darker spot or paste a sheet of brown paper on half of the jar and watch for results. Objects begin to hatch in all directions. You can study all you want for many evenings, and don't forget the old and young are glad to drop in and see "them there pesky bugs. My, look at that worm, Joe! Look quick: say it's gone! What was it, Mister?" Now comes a job for you to explain the

terms rotifer, daphnia, entomostraca, rhizopod, vermes!

Can you give an English equivalent or their meaning? What books can we find these small monsters in. Well, turn to your Alfred C. Stokes's "Aquatic Microscopy for Beginners." The doctor was formerly contributor to "The Observer" and works he has written will repay you.

Another excellent manual—but now we must cross the Atlantic for England and France are the homes for handy cheap manuals—is that veteran and kindly teacher's book in natural history rambles, "Ponds and Ditches" by the late M. C. Cooke. His death at the ripe age of eighty has just been noted and his loss is world-wide. To this series add his "Woodlands," and "Rust, Smut and Mildews" for another day; Napier's "Lakes and Rivers" costing about sixty-five cents without duty. Another is H. Scherren's "Ponds and Rock Pools," fifty cents, J. Babcock's "Vignettes from Invisible Life," "Marvels of Pond Life" by H. J. Slack. Of the "Peeps at Nature" series, few can equal for the price "Pond Life" by the Reverend Charles A. Hall, with colored plates and photomicrographs, (Black). In Dent's "Open Air Nature Books," "The Pond I Know" for sixteen cents. "The Stream I Know" is nearly ready and a series of others very useful and well illustrated with colored plates and photomicrographs. The People's Books are handy and "Pond Life" by E. C. Ash, No. 65, for twelve cents net is not to be despised because it is cheap. The Young Collector's Series of Sonncenschein & Company are inexpensive—about twenty-five cents each. "Pond Life and Insects" by E. A. Butler, "Land and Freshwater Shells" by J. W. Williams, Roebuck & Taylor; "Pond Life" (algae and diatoms) by T. S. Smithson, "Crustaceans and Spiders," F. A. Skuse; "Ants, Bees and Dragon Flies," W. H. Bath, all help. To these add W. Furneaux's "Life in Ponds and Streams." This set is a most useful adjunct to one's library and all are well illustrated, published by Longmans Green & Company. To those desiring help in keeping "Fresh Water Aquaria," G. C. Bateman, 2 to 6 (Upcott Gill) is a great help. These are all handy volumes and for those taking up special studies like diatoms, desmids, algae, we shall have something to say at another time. More advanced books can be found on all subjects, and you cannot do better than consult "The Transactions of the American Microscopical Society." Do not forget the great study on "Rhizopods" by Jos. Leidy, whose monumental work will never be forgotten.

I must stop or the editorial stick will be chasing me from my pool so I will say all the old volumes of the "American Monthly Microscopical Journal," "Microscope," "Quekett," "Royal Microscopical Journal," "New York Microscopical Society" and our own back numbers of "The Observer" will help in many details.

Some day I hope to see that pond and tell you what I found, but possibly our correspondent, Frank J. Myers, can continue his findings since the Atlantic City ponds, as he has been home to study them out. How I wish I had been in his company for so many ask, 'Where shall I go when visiting in new places?" And it seems a pity not to take advantage of the trip when able to do so. Wintertime is good to obtain the statoblasts, fresh-water sponges volvox, cyclops, daphnia, polyzoa and tubular Rotifera, etc. It is also a good chance to prepare your collecting outfit, to read up and to experiment in mounting for permanent preservation.

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[Nothing could better show the need of this magazine than this list of books and periodicals. Nearly all are out of print or out of date. We need modern guidance from present day workers with the enthusiastic spirit of these old-time publications. Let us have this in this department under the skilled leadership of Dr. Latham. We heartily echo the editorial appeal, "Let us in the old spirit of good comradeship 'get together' so our friends can find us."—E. F. B.]

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**Avoid Rust on Instruments.**

Equal parts of almond oil and alcohol. Keep instruments especially hypodermic needles, in a covered dish. To use, drain off oil and clear with a jet of alchohol if they are needles.—Bernard Wolfe, M. D.

### "Science and the Boy."

THE DUTY OF THE TEACHER.

"Instill the love and reverence which you feel,
The sweet delight in flowers and the sky,
By pictures, books; in landscape fair and wide,
In the high mountains and the boundless sea.
Teach him to love all these; moreover, name
The petals of each flow'ret, class each shell:—
Mark well the wondrous fashion of God's work, in bird, animal, and insect."

Hundreds of persons now purchase microscopes from the force of imitation, and a laudable desire to obtain an insight into the wonders of creative skill, which are, perhaps, more astounding in the apparently boundless regions of the minute, than even in the unfathomable depths of celestial space; but they are apt to be discouraged by the technical difficulties in the way of collecting and preparing materials for the investigations or research. Some do not know how to begin work on the subject, what books are best suited to the subject or within the price of their pocketbook. Others, when they see the objects under their microscopes, do not know what they are. To whom can they go? Who is there in their locality willing to help a fellow over the stile, to stimulate and encourage a willing but timid amateur to learn the road to pleasure, not only for himself but many others? To none can nature be selfish and never can she fail to donate something for thought, for work, for pleasure, for business, for profit or for cash. In every walk of life she is there. In every line of work she needs a microscope to fathom the wondrous methods of her compilations, to the physicists, the chemists, the physicians, the biologists, the agriculturists, the business man in textiles, the lawyer for inks, parchments and forgeries, the forensic expert in murders and poisonings, the revenue and treasury departments, the food and analyst's office, the engineer in all his special branches, the artist, the pottery workers, the zoologists and the botanists the photographer, the optician, even to the lumberman and the stockyards. These are only a few and I must only add the "hobbyist," if I may coin a word. To these and all I can only add, with your "auto," your health, a long or a short purse, the will to learn, the desire to encourage the youth for a clean and moral uplift, the seeking for health and rest, these are yours for a little effort and a remembrance. To return to nature a little of what she desires, to propagate her kind for others' benefits and above all be not selfish, *take not* if only one specimen of a kind, tear up nothing from its home unless absolutely needed. The microscope needs very little to keep you busy and the ruthless destruction of life is a grave and serious error, not only to you, but to those for future years and all time. *Remember if seeds and plants are destroyed neither they nor animals can develop without the beginnings of life and their natural wants.* Many localities to-day are wastes and barren spots, and all due to the destructive and meaner traits of man. The early inhabitants of this country have been driven away by graft, by giving of drink and by civilization of the wrong kind to become a degenerate and a fading race of mankind. To the man who says, "I have nothing to study," or, "Where can I obtain material for examination?" I would say Everywhere, out of doors, indoors, in your pantry, bread jars, jam pots, damp cellars, woodpiles, foods, barnyards, water barrels, fences, garden and plants. It is bright and sharp eyes that find, fingers that make, patience that helps, the will to do, and the planning to use your odd time, not from the necessary business of the day but the spare and recreative hours which are often a sadly wasted item and that never return.

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### "Recreative Science."

By this we understand the cultivation of the various branches of physical and mathematical inquiry in a way to afford amusement as well as instruction. Every science has its recreative features; every separate and single fact in nature has a sunny side and when we have solved a hard problem we may find repose and refreshment in tracing out what poetical analogies it may yet induct us to in the consideration of its recreative features. To enlist the sympathies of the young, and brace up the powers of the mature mind in the investigation of natural phenomena, will be the object of the little department now offered to the public. Truth will have herein all

the vestments of beauty that of right belong to it. Science, in the sternest sense of the word, will never be sacrificed to any mere literary effect; but we shall gather, as the bee does, the sweetest honey drops from the fields of human learning, and at every step recognize, in hope and faith and love, the Source of things created and point the mind of the student to the great Benefactor. Nature lies before us as a panorama; let us explore and find delight. She puts questions to us, and we may also question her. The answers may oftentimes be hard to spell, but no dreaded sphinx shall interpose when human wisdom falters. Linking the departments of knowledge together by the threads of their inevitable connection, let us help one another in our several regions of research, and so lead the way towards the perception of harmonies of which we have already the foreshadowings in the genuine poetry of science.

### Nature.

We are of God's workmanship, created in His image, gifted with powers to perceive and appreciate the wonders of His skill in the creation which exists around and above us. It is our privilege that we find delight in the investigation of causes and the detection of analogies, as well as in observing the distinctive features of objects in the great system of harmonies which we designate as Nature. Science defines and classifies the results of research, brings together related facts, deduces from them general conclusions, and so lays the bases of systems of knowledge which are the pride and glory of our civilization. This is the age of invention and discovery, and the meanest affairs of life, equally with the noblest works of utility and elegance, are indebted to science, either for their origin, or at least for the fundamental principles out of which they spring. We banish darkness from our streets by the help of the chemist; we know the day and hour at which an eclipse or occultation will occur by the predictions of the astronomer; the sun paints pictures for us on media prepared by the photographer, and places separated by distance hold converse by the instantaneous communications of the electric wire. The wireless waves have brought joy to many, who on the brink of a watery grave were rescued in a marvelous manner. To speak lightly of scientific studies is to ignore the entire fabric of our social life, with all its amelioration for the body and the spirit; but to stimulate the spirit of research is to help in the onward march of human advancement, and realize the idea of the poet, that "the thoughts of men are widened by the progress of the suns."

### The Food of the Mole-Shrew.

H. L. Babcock, in **Science** for October 9, defends the common short-tailed shrew against the charge of being a farm pest, and argues on the contrary that he is one of the farmer's best friends.

The little creature it appears, will not touch any sort of fresh vegetable, and will take corn and oats only when driven by hunger. Otherwise, he lives entirely on animal food, of which he devours twice his own weight every twenty-four hours.

The favorite diet is mice. The tiny shrew, only a half ounce in weight, kills and devours rodents twice its size; and it is estimated that on a hundred acre farm, four shrews to the acre will dispose of 38,400 mice each year. Considering how very destructive the mice are, so vast a destruction is cheap at the price of the little trouble which the shrew-mole makes by his burrows.

Next to mice and moles, the shrew prefers insects of various sorts, especially grubs and larvae, with earthworms and snails. During the winter, most of the food is dormant insects, which the shrew finds by burrowing among dead leaves under the snow. Since each shrew the year round, accounts for about an ounce of insects and other small pests daily, its service to the farmer is almost beyond calculation.

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The leaves of many desert plants are provided with a thick felting of [illegible] absorbing organs for the moisture of the night dews. These leaf hairs have, therefore, the same function as the root hairs and moisture is not, it appears, taken in through the breathing pores.

# EDITORIAL

**Of Age as Agassiz Association Editor.**

It was twenty-one years ago on January first that "The Observer," published at Portland, Connecticut, and edited by the present editor of THE GUIDE TO NATURE, became the official organ of The Agassiz Association. That magazine was discontinued after the issue for August, 1897. For three years longer, the AA interests continued to be cared for by the present editor in "Popular Science" of New York City, then under his editorship. For nearly seven years THE GUIDE TO NATURE has been the official organ of the AA. The affairs of the AA have for twenty-one years been editorially mostly under the care of the present President of the AA and editor of THE GUIDE TO NATURE.

In an extended announcement by the former President, Mr. Harlan H. Ballard, Pittsfield, Massachusetts, made just twenty-one years ago, Mr. Ballard details his experience in studying nature twenty years before that time. The establishment of the AA forty years ago was an important change for the better in the study of nature. He said:

"Twenty years ago the writer obtained 'Honorable mention' in the department of Natural Science in a prominent New England college without knowing anything about natural science. He had completed his course in chemistry without handling a single chemical re-agent, and without touching a single piece of apparatus; he had passed his examinations in physics without having performed a single experiment; he had taken high rank in botany without observing the germination of a single seed; he had been 'passed' in mineralogy without even seeing, much less making, a single determination; he had finished zoology without witnessing a dissection, and without learning of the existence of such a branch of science as biology; and he had mastered (?) astronomy without once looking through a telescope. During the entire college course he never saw a microscope in any class-room.

"The only approach to right methods of instruction in science, appeared in the first six or eight lessons in zoology, when a half bushel of dried sea-urchins and star-fish was distributed among the class, to be examined through a pocket lens preparatory to a brief lecture on their homologies; and in the beginning of botany, when each student was desired to collect and 'analyze' one hundred plants.

"After the examination of the dried sea-creatures was ended, we reverted to the text-book, and daily committed to memory four pages of definitions, and crude descriptions of 'typical species.'

"Such was the scientific education of our average college twenty years ago.

"Better work is done to-day in every well ordered grammar school.

"Deeply impressed by the inefficiency of book teaching as then practiced, the writer organized in 1875, a little school society of natural science. It was very simple and crude, but it had for its object the development of personal observation on the part of each member.

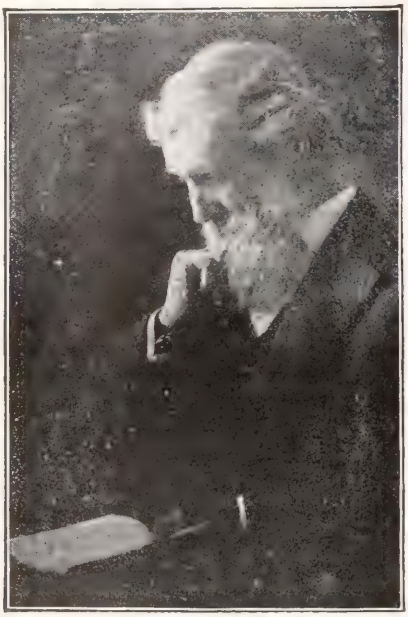
"It was the outcome of a belief that education should include some practical knowledge of our natural environment. The society was directly in line with suggestions made by Professor Louis Agassiz that there would be great advantage in the establishment of local societies for the study of local phenomena."

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The death of Dr. August Weismann, on November 6 at the age of eighty years, removes one of the foremost figures of the scientific world. Professor of zoology at Freiburg for nearly fifty years, he was the special disciple and successor of Darwin, and the leader of the so-called Neo-Darwinian school of naturalists. His scientific fame will rest largely on his truly epoch-making contributions to the theory of heredity; but the out-of-door observer will probably remember him longest for his studies in seasonal differences in the patterns of butterflies' wings.

## John Muir.

At Christmas time the newspapers told of the death of John Muir of Martinez, California, on December 24th. Every one who knows nature, especially in her larger aspects of mountains, glaciers and forests, knows John Muir and was pained to learn of the passing



JOHN MUIR.
Cut by courtesy of Houghton, Mifflin & Company, Boston, Massachusetts.

away of this great California naturalist, affectionately known as John O' Mountains, in contrast to John Burroughs, our eastern naturalist at West Park, New York, known as John O' Birds. The western John gave especial attention to the scenic phases of nature as our eastern John does to various forms of living things.

Ten years ago the editor of this magazine spent a Sunday with Mr. Muir at his Martinez home. This visit was arranged through the kindness of Miss Helen Swett and Miss Bertha Chapman, who accompanied him. Miss Swett is the daughter of the late John Swett, the beloved pioneer teacher and educator in California whose home joins John Muir's. Both had immense vineyards in the Alhambra Valley. (Miss Chapman was supervisor of the nature study of the Oakland school.) She is now Mrs. Vernon Mosher Cady of New York City. Because of Mrs. Cady's intimate acquaintance with Mr. Muir and his daughters, Wanda and Helen, we have requested her to give something of her personal recollections of John Muir as she knew him. She has complied with that request in the following.

## A Personal Tribute.

BY BERTHA CHAPMAN CADY, NEW YORK CITY.

John Muir is gone! The message came so unexpectedly it sent a chill through my heart as it did to every lover of the out-of-doors in this broad land of ours. John Muir, a name forever bound with the rugged western wilderness of mountain and forest as John Burroughs's name is one with the gentler hills and woodlands of the East. John Muir the naturalist of the Sierras, the man who above all others has taught us how to know and to love our wonderous mountains and our gaint trees. He knew their every mood for he has lived with them as his most intimate friends through the soft days of summer and the silent nights of deep snow-buried winter. Every bird was a friend. All the lesser dwellers of the forests seemed to be a part of him. He was a rare botanist and an ideal guide to the mountains and meadows he knew so well. No blossom was too tiny or too shy to pass unseen and no giant sequoia too great to be appreciated by those strangely penetrating eyes that always had a way of looking straight out at the world seeming to hold it for his own.

To-day I can see him as I last saw him among his beloved Sierras, sitting easily against a gray granite boulder as a group of friends lounged near him. We had wandered across a wonderfully green meadow, here and there waist high with gorgeous blossoms. Muir's face shone with the joy in his heart and as we passed to rest this sinuous, brown, weather-beaten man of the mountains sat looking far across the meadows toward Mt. Dana. What a picture! He pushed the silvering hair back from his forehead and began to talk. This was, of course, what we were waiting for, what we always waited, and how the little man could talk, and how he seemed to joy in the talking—not if there were many about or if others took part but when he could

quietly develop his theme in his own way, giving his patiently wrought theories on some cherished subject like glacial action in the Yosemite. He often told of his travels here and there through these mountains or others in distant lands with a vividness of the artist. His word pictures of natural scenery were masterful for he told of the things he loved, from the fullness of his heart.

I remember his affectionate caressing of a peculiarly beautiful mountain hemlock as he passed along a ridge trail overlooking a vast forest. He always said the hemlock is the most feminine of our mountain trees. They are always lovely and graceful no matter where you find them nor how severe their struggles may have been with storm and poor conditions. In overlooking this same forest, when in the full glory of blossom time, Muir was deeply moved by the rich glow of purple and blue mingled with the silvery gray of the foliage. One magnificent riot of color steeped in the full clear sunlight of the mountains—surely a picture for the gods and men. Long, long and reverently he looked and seemed to breathe the beauty into his soul. He said the wondrous blue of the pistillate flowers was of so fine and pure a tone that the best azure of the high sky above us had surely been condensed in their making.

John Muir was a dreamer, yet he had not been born a Scotchman and reared a vigorous Calvinist for nothing. He had eyes to appreciate the natural wonders and the seer's wisdom to know what it might mean to generations of men and women yet unborn. He saw the vandals at their work, saw and understood what money greed would make of our country's treasures. This was enough. John Muir was convinced and he never stopped until he had succeeded in convincing others and we shall forever be deeply in his debt for saving our Yosemite and our wonderful forests. He above all others could see and comprehend the giant Sequoia. He wrote and talked and argued and fought and was victorious, leaving these treasures for us to enjoy forever. Not only this but he has also left his precious guidebooks with us. No better companions can go with us in our tramps among his mountains than his own "Mountains of California," "The Yosemite" and "Our National Parks." Blessed are we who can hear his own gentle voice speaking through these pages and see his clear gray eyes looking at us while he paints the pictures of the land he loved. It will be long before another voice shall speak so truly of this wild and little known land with its ever changing moods. He knew how to picture for us the upheaving granite domes whose polished crowns flash back the glittering shafts of their nearer sun, or with undaunted spirit lead us to the dizzy height whose titanic fronts are torn and rent with thunderbolts of ages. Turning from nature's giants he could pluck a heavy scented orchid from the shadow or stoop to lift the snowy violet's head, drooping beneath the chill night's crystaled dew, or pause to warm a sleeping butterfly back to life.

As a young man he wandered into the Sierras for a few weeks of rest but they cast their spell about him and he was theirs. Never again did he leave them for long. He traveled here and there about the world yet he turned to his mountains after each journey as a man returns to his home. It must forever be a comfort to us who knew and loved him to remember that he was near them at the last. Often he compared the great Sierran range to a magnificent wall composed of light beyond which might well be the celestial city, and we shall always feel his feet have but wandered into a new life beyond his own beloved "range of light."

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### He Made the Clock Light the Fire.

John Muir when a boy was fond of tinkering with clocks, thermometers and various other scientific apparatus of his own invention. The following from "The Story of My Boyhood and Youth" tells how he made a clock perform his task of lighting the fire in the country schoolhouse each morning:

"The winter was very cold, and I had to go to the schoolhouse and start the fire about eight o'clock to warm it before the arrival of the scholars. This was a rather trying job, and one that my clock might easily be made to do. Therefore, after supper one evening

I told the head of the family with whom I was boarding that if he would give me a candle I would go back to the schoolhouse and make arrangements for lighting the fire at eight o'clock, without my having to be present until time to open the school at nine. He said. 'Oh! young man, you have some curious things in the schoolroom, but I don't think you can do that.' I said, 'Oh, yes! It's easy, and in hardly more than an hour the simple job was completed. I had only to place a teaspoonful of powdered chlorate of potash and sugar on the stove-hearth near a few shavings and kindling, and at the required time make the clock, through a simple arrangement, touch the inflammable mixture with a drop of sulphuric acid. Every evening after school was dismissed, I shoveled out what was left of the fire into the snow, put in a little kindling, filled up the big box stove with heavy oak wood, placed the lighting arrangement on the hearth, and set the clock to drop the acid at the hour of eight; all this requiring only a few minutes.

"The first morning after I had made this simple arrangement I invited the doubting farmer to watch the old squat schoolhouse from a window that overlooked it, to see if a good smoke did not rise from the stovepipe. Sure enough, on the minute, he saw a tall column curling gracefully up through the frosty air, but instead of congratulating me on my success he solemnly shook his head and said in a hollow, lugubrious voice, 'Young man, you will be setting fire to the schoolhouse.' All winter long that faithful clock fire never failed, and by the time I got to the schoolhouse the stove was usually red-hot."

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Those who fear that life has lost its color in these bustling times of practical work will do well to read the life of John Muir, who died at Los Angeles the day before Christmas, at the ripe age of seventy-six.

* * * * *

Although of a daring genius, as all great adventurers must be, he was a man of scientific habits of mind, careful observation, thorough reflection, and had an eye for a fact, whether it was written in a book or in stones. All this time he was not only a naturalist, but an artist; for the soul of the hills spoke to his soul, and there was a wonderful fellowship between them. John Muir belonged to a type very often praised, very rarely realized: he was a natural man. He lived on the most intimate terms with nature, but not after the savage fashion. On the contrary, his intelligence was of the keenest and his training had been of the best. So he became not only an explorer and lover of the hills, but their defender and champion.

* * * * *

He was always the adventurer at large; one of the most striking figures of our time; a typical American in his simplicity, courage, love of nature, and insatiable curiosity to understand the world in which he lived.—The Outlook.

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John Muir talked even better than he wrote. His greatest influence was always upon those who were brought into personal contact with him. But he wrote well, and while his books have not the peculiar charm that a very, very few other writers on similar subjects have had, they will nevertheless last long. Our generation owes much to John Muir. —Theodore Roosevelt in "The Outlook."

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### Is The Date Palm Originally American?

In the *American Journal of Science* for May, 1914, Edward W. Berry of Johns Hopkins University announces the discovery of a fossil date palm in eastern Texas. The tree has been known since prehistoric times as a native of central and northern Africa and of southwestern Asia. Fossil palms are also known from various places in Western Europe; but this is its first and only known occurrence in the Western Hemisphere except where it has been introduced from the East.

This ancient date had much more seed and much less fruit than the modern form, and its flesh was apparently stringy and tough compared with the modern date. The ancient tree was probably not necessarily a desert form as the modern is.

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Associate reverently and as much as you can with your loftiest thoughts. Each thought that is welcomed and recorded is a nest-egg by the side of which more will be laid.—Thoreau

### Original Colonial Stock.

The Division of Physical Anthropology of the United States National Museum is now collecting series of measurements and other data concerning "the old white American" stock. This race, which made American civilization as we know it, has been virtually ignored by all students of anthropology and sociology, who have all with one accord devoted their entire attention to the older Indian tribes, to Negroes, or to recent immigrants.

It is hoped, before this splendid old race becomes finally extinct, to make a record of three or four hundred typical individuals between twenty-four and sixty years of age, as to stature, head and face dimensions, chest measurements, the size of ear, hand and foot, together with muscular strength, body temperature, pulse rate, and breathing rhythm, and the color of eyes, hair and skin. By this means, when the original colonial American stock is no more, future ages will still have an idea what it was like.

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### The Ideal Quail Shelter.

Herewith is an illustration of a most practical quail shelter. There are hundreds of just such locations in your vicinity where these can be placed, the opening to the South. Be very sure that the gravel as well as the feed is continually kept under these covers. Quail may be easily enticed into these coverings by small feed leaders of grain. Quantities of chaff are found to be very attractive, but the main feed is buckwheat, cracked corn, rye and oats.

The shelters may be made of old boards, with quantities of cedar brush on top. The size of the opening is about 6 feet high and 8 feet wide, the roof running to the ground in the back.

STATE BOARD OF FISHERIES AND GAME.
JOHN M. CRAMPTON, Superintendent.



AN EASILY MADE AND PRACTICAL QUAIL SHELTER.




**Pausing between Jumps—Here, There and Everywhere.**

### Wondered Why the Church Would Not "Run."

In the wilds and among the hills of southern Indiana is a remarkable example of modern conveniences amid primitive surroundings. The West Baden Springs Hotel is a wonderful specimen of architecture and of hotel conveniences. The dome is the largest in the world, even larger, it is claimed, than St. Peter's at Rome. But West Baden, where the well-known Spruedle water is bottled and whence it is sent to various parts of the country, has an active competitor in French Lick, about a mile away, where is bottled the well-known Pluto water. Both places are popular resorts, especially in spring and autumn. The competition for guests is keen. At French Lick is a prosperous and well attended Presbyterian Church and also a Congregational Church, but there was no church at West Baden. The Honorable Lee W. Sinclair, who knows all there is to be known about running a hotel, but judging by his emphatic language at times is decidedly deficient in a knowledge of religious and church matters, decided that he must have a church. Mr. Sinclair is a self-made man and believes that where there is a will there is a way. When one wants a church the only thing to do is to build it and manage it as you would manage a garage, a livery stable or any other business enterprise. He felt, however, that he was doing something rather unusual, and because his immediate associates knew that his strong point was not religion, he took into his confidence only his architect and builder and said, "Don't tell the other fellows what we are going to do; we will just go ahead and do it."

When the men began to dig in the bank immediately back of the hotel, everybody's curiosity was naturally aroused, and Mr. Sinclair was pestered with many questions.

"Hey, Sinclair, what are you going to do now?"

"Now that is none of your business. If I want to dig, I guess I'll dig just as long as I want to dig. You watch and see."

The result of the digging was a fine foundation that, to the surprise of all visitors and friends, gradually became a thoroughly modern Roman Catholic Church. If you want to furnish a church, why go where they sell the things for a church. Mr. Sinclair bought even the vestments, the Stations of the Cross, the altar, everything complete, but in about the same spirit in which he would fit out a bowling alley.

"If my guests want a church I guess they can have a church, and one better than they have over in French Lick where that Democratic politician, Taggart, holds supreme sway."

He proceeded with every detail until the church was a perfect gem, a work of art, with not the slightest detail left undone, for he is a man who looks after details and when he starts to build a church makes a thorough thing of it.

The next thing to do after building a hotel is to get help in running it. The way to get help is to advertise. So he advertised. "Wanted: A Catholic priest to run a first-class church. Good salary and first-class board at near-by hotel. Apply to L. W. Sinclair, West Baden Springs Hotel." But a surprise awaited Mr. Sinclair. There seemed to be no priest without a parish.

West Baden was puzzled. Here was a church standing idle, and everybody

wondering why so much money had been put into it and "nothing doing." Mr. Sinclair is so busy looking after the details of the hotel that he is not an especially approachable man and nobody was taken into his confidence until at the end of about two years when while talking with one of his prominent Catholic guests he said, "What is the trouble with the Catholic Church anyway? Isn't there anybody in it that wants good board and good money? Here I built the best Catholic Church there is in Indiana and have liberally advertised everywhere for a man to run it and not a man has applied. Now that was not so when I built my race track or my bowling alley or my garage. I can get anything else but I cannot get anybody to run that church thing."

Said the guest, "Do you not understand that all Catholic priests are on assignment and that the Bishop will not assign a priest to a church that is not owned by the diocese?"

This quiet remark brought the emphatic Sinclair bounding to his feet. "Why didn't somebody tell me the Catholic Church wanted me to give it another church? Make out the papers at once and I will turn the whole thing over to them, land and all."

In the words of the novelist, they lived happily ever after. A faithful and devoted priest offers the Holy Sacrifice regularly in this beautiful church, the Mecca of thousands of pilgrims that seek rest for soul and body at this wonderful hotel.

### Jefferson's Crooked Brick Wall.

I recently obtained at the University of Virginia photographs of the side and of an unusual top view (which I obtained with some difficulty) of the crooked brick wall constructed under the direct supervision of Thomas Jefferson. This wall has stood for decades, yet it is apparently fragile, as it is only one brick in thickness, but on account of the peculiar construction it stands firm, the curves having, of course, been made to increase the stability. More than a dozen times while I was at the University I heard the story of that wall somewhat as follows:

"You know how that wall came to be built, don't you?"

At each inquiry I said, "How was it? Tell me."

"When Jefferson had charge of the building of the University he came home one night after having imbibed pretty freely, as everybody did in those days, and as he made uncertain progress across the fields, he decided to select a place for a new wall, and here it is. It shows where he walked that night, and how he did it."

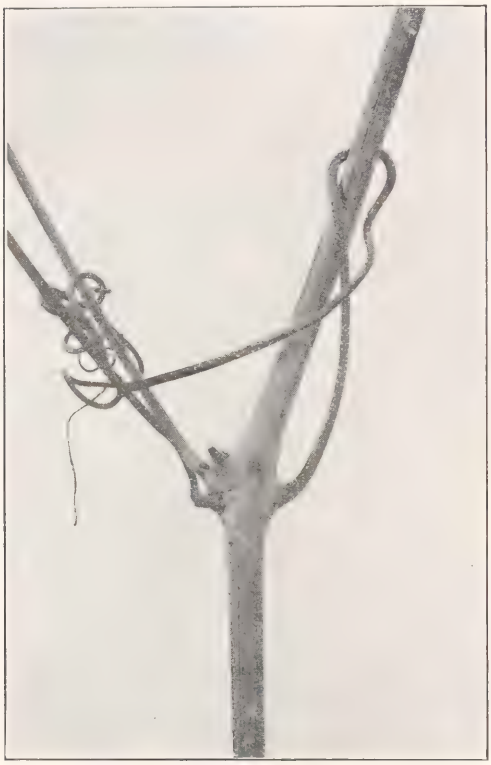


JEFFERSON'S CROOKED BRICK WALL.

It is safe to say that this story must have been repeated thousands of times. The university is big, many students are there every year, a summer school, of twelve hundred teachers and many visitors, meets there. Every one hears the story, carries it away, repeats it to his friends and they to theirs. I gratified many an interlocutor by feigning ignorance of the fiction, and had my reward in observing the changes in each succeeding version. Like a translation made by two persons, the stories agreed in matter, but differed widely in style and diction. Yet all were sure that Thomas Jefferson that night had had a little too much of "the critter," and walked accordingly. The weak points in the yarn are obvious. They need not be pointed out.

### A Tendril Soliloquy.

I sat on a crumbling stone wall at the edge of a swamp, with my camera and collecting box at my side. I was



"BUT YOU, STRAGGLER, WHAT ARE YOU DOING?"

Oh, I just make collections for my own pleasure. I do not care about other people."

tired. I had been tramping for miles, but in the last half hour had found little of special interest or value. Perhaps that made me pessimistic, for my thoughts ran in a "Persian Garden" style. I felt like asking myself, as the old farmer had asked me an hour or so before, "Have ye lost anything, Mister?"

Seriously, let me introspect, let me form a "Rubiyat" of only three words, "What's the use?" One can be selfish, even in the love of nature. Are all these miles of communion with nature, is all this physical weariness endured for self or for the good of others? How will the world be made happier and better by my labor? Which is the more commendable, to help self, or to help others?

At that moment my eye was attracted by a clambering grapevine with a profusion of tendrils. How mutually helpful, how each supports and is supported in the climbing toward a life that shall be higher and better lighted.

But you, straggler, what are you doing? Only clinging, intertwining for self.

O foolish tendril! O unhappy vine! you cannot reach highest happiness for self or others in being an individual.

No other tendrils have intertwined so gracefully, so firmly,—but it is all lost, for you are only acting for self.

O foolish tendril! You neither support nor are supported. I believe that you are unhappy.

No others have struggled harder, but by your selfishness you have lost your own happiness, and have added to the burden already borne by the vine, O foolish tendril!



"HOW MUTUALLY HELPFUL, HOW EACH SUPPORTS AND IS SUPPORTED IN THE CLIMBING TOWARD A LIFE THAT SHALL BE HIGHER AND




**Beginnings in Agriculture.** By Albert Russell Mann. New York: The Macmillan Company.

This is a thoroughly practical book in its suggestions for the study of agriculture in the seventh and eighth grades of elementary schools. It is well arranged and the subject is attractively presented. It will interest and instruct pupils in the study of elementary agriculture.

---

**Illustrations of a Thousand Shells.** By Y. Hirase, Karasumaru, Kyoto, Japan. Made from wooden prints. Single copy $1.50, including the postage.

This unique and charming book is a good specimen of Japanese skill and artistic taste in book making. It is beautifully bound in silk, the illustrations are exquisite, and the pagination is delightfully unusual in America, whatever it may be in Japan. The Japanese people are lovers of nature. Some of that affection is embodied in this attractive book.

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**The American Annual of Photography, 1915.** New York City: George Murphy, Inc., 57 East Ninth Street, General Sales Agents. Price in paper, 75c; in cloth, $1.25

Ths standard manual for American photographers covers a wide range of photographic interests. The pictures are beautiful, the articles are interesting, the entire book is full of details, and the printer has well done his part. We cordially commend it to all who love to write with light on sensitive plates.

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**Students' Handbook to Accompany Plants and Their Uses.** By Frederick LeRoy Sargent. New York: Henry Holt and Company.

This is a unique little manual that at once commends itself to the reader. It contains many interesting and valuable directions for the testing of seeds, the study of food plants, of those that are poisonous or medicinal, or are used in the making of beverages or for industrial purposes. The book is edifying and meritorious.

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**Studies of Trees.** By J. J. Levison, M. F. New York City: John Wiley & Sons, Inc.

The book covers the whole range of tree study including the identification of trees; their nature, habits and growth; insects and diseases which attack them; their grouping and planting; the pruning and care of trees; the identification of commercial woods; the care of the woodlot and forestry in its many aspects.

The treatment is concise, systematic and free from an undue use of botanical terms. The author's aim throughout is to give only the salient points and to so present his text that the reader is enabled to reach at a glance the main features of the subject under discussion.

---

**The Birds of New York.** Part II. Published by the State Museum at Albany, New York.

Readers of Part I especially will heartily welcome the appearance of Part II. The new issue makes a volume of more than seven hundred quarto pages, with sixty-four colored plates and as many more text figures in black and white. The editing has fallen to the same competent hands as the former work—those of Mr. E. H. Eaton. Altogether the two volumes are by far the best thing that any of our state governments have yet turned out on any similar topic.

As Part I disposed of the water and game birds, Part II is given over to the ordinary land birds. About five hundred pages are devoted to a systematic account of these, the order being that of the A. O. U. check list. The remainder of the work takes up such matters as the economic value of birds, legislation concerning bird life, measures for increasing the number of birds, private preserves and sanctuaries, food, nesting sites, habits, migrations, and the like.

The entire work is the standard authority on the subject for the region which it covers.

---

**The Pet Book.** By Anna Botsford Comstock. Ithaca, New York: The Comstock Publishing Company.

Here is the book that has been needed by our Members and friends that love animals. Heretofore nearly all the books pertaining to pets that have been obtainable are English manuals and somewhat out of date or out of place. Other similar books, even when modern, seem to favor animals for sporting and exhibition purposes rather than for nature study. Mrs. Comstock is an enthusiastic exponent of nature study. She has produced just the book that is needed. To help her she has had the liberal support of some of the best photographers and artists in the country. The publishers too have shown the right spirit and have done their part thoroughly. Each chapter is well arranged giving first the interesting peculiarities of that particular animal, followed by subdivisions that pertain to the home, food and care. One of the most interesting sections is devoted to the pig. The author does justice to even this commonplace subject. The reader of this chapter will agree with her that the pig has many attractive qualities. She says: "A little pig makes a charming pet. It is pretty and neat and very intelligent. It will soon know the little master or mistress who feeds it, and will follow those it loves like a devoted dog. It is sufficiently clever so that it may be taught many tricks, and will repay patient training."

**Nature Songs and Stories.** By Katherine Creighton. Ithaca, New York: The Comstock Publishing Company.

Again The Comstock Publishing Company has given a commendable stimulus to the child's interest in nature. Most of us older people could go directly to nature for a song in the heart and for unexpressed stories of the pathos of the years and of our nearness to Mother Nature in the long ago, but children need to express orally and verbally the joy that nature arouses. Many a teacher will hail these stories with delight and gladly read them to their pupils, and many a mother will find here just the thing in story and song to arouse an interest in nature. The illustrations are appropriate and beautiful.

**A Handbook on Frogs and Toads.** The Museum of The Brooklyn Institute of Arts and Sciences has issued an interesting brochure on "The Frogs and Toads," by Frank Overton, M. D. The classifications are convenient. The illustrations are of more than the usual order of excellence. A better photographic portrayal of piping frogs and toads has never come to our desk.

---

Professor Albert F. Blakeslee of the Connecticut Agricultural College already well-known to nature lovers through his book on "Trees in Winter" has a most readable article in the November issue of the Journal of Heredity (Washington, D. C.), on the height of various sorts of corn grown on the college plats and the stature of students of the institution. The whole makes a most suggestive and illuminating discussion of heredity, eugenics, the influence of environment, the distribution of mental ability and a half dozen other matters which just now especially engage the public mind. Few modern biologists have so well expressed the scientific attitude toward social questions.



A MALE TOAD "SINGING" (BAGPIPE STYLE).
From the Science Bulletin of The Museum of The Brooklyn Institute of Arts and Sciences.

**The Wonder of Life.** By J. Arthur Thomson, M. A., LL. D. New York City: Henry Holt and Company.

This book is by the author of the well-known "Biology of the Seasons," "Darwinism and Human Life," and "The Study of Animal Life." It contains many accounts of interesting phases of life. It is really a cyclopedia although it includes only the biological facts that are the most interesting and most important. It was brought to my attention by one of our Members who stated enthusiastically that he had found it helpful and advised me to get it. I have not seen any other book of the kind that contains a better selected series of interesting examples. For the beginner or for him who is well advanced in nature study it will be an inspiring and helpful volume. It is profusely illustrated.

# PUBLISHER'S NOTICES

'Tis not in mortals to COMMAND success, but we'll do more, Sempronius, we'll DESERVE IT.
—Addison: Cato.

### An Almanac that is Worth While.

One of the neatest, cleanest, best arranged almanacs that have come to this desk is the one issued by the The Atlantic Monthly Company Boston, Massachusetts. It tells in convenient form just what one wants to know as the earth rolls on and travels around the sun for 1915. "The Atlantic Monthly" seems to be growing better with every issue. There is a lot of good common sense and skilled literary ability displayed in this rapidly growing magazine.

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### For Winter Photography .

The C. P. Goerz American Optical Company, New York City, are introducing an ideal lens for winter photography. It is known as the Dogmar F: 4. 5 lens Their pocket cameras and their lenses make outdoor photography alluring even in severe weather. When you write to them, do not fail to ask for a copy of their memorandum book and for particulars of their Fago Theatre Glass. This glass should interest all that even seldom go to the theatre or the opera. It is a beautiful piece of work and beautifully effective.

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### "School and Society."

This is a weekly journal covering the whole field of education in relation to the problems of American democracy. It begins publication with the number for January 2, 1915, under the editorship of Dr. J. McKeen Cattell, professor of psychology in Columbia University and the Teachers College, editor of "Science," "The Popular Science Monthly" and "The American Naturalist." The journal will follow the general lines that have made "Science" of service in the sciences, cooperating with publications in special fields, aiming to become the professional journal for those engaged in the work of our lower and higher schools, and to be of interest to the wider public for whom education is of vital concern. It will emphasize the relations of education to the social order, scientific research in education and its applications, freedom of discussion, and reports and news of events of educational interest.

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### He Has Built a Conchological Museum.

There are few things in nature more interesting than the collecting of shells. They appeal to everybody, either from their beauty alone or from their scientific interest. Many of our naturalists began by collecting shells. One of our members in Japan, Mr. Y. Hirase, Karasumaru, Kyoto, Japan, years ago started with us as a member and has grown up under our auspices. At present he has a large conchological museum and supplies shells to all parts of the world. He has many patrons in this country. The war in which Japan is engaged and the specially hard times have drawn the attention of some people, especially his patrons in Europe, from shells to other matters. We, therefore, appeal to all shell loving people outside of the war districts to send Mr. Hirase an order. He is engaged in commendable work. not alone from the business point of view but from a desire to interest other people in shells. He is a genuine amateur and has views of nature at the proper angle. Write to him and give him at least a small order.

---

When one has health, strength, and expertness to do a thing there is pleasure in doing it. In a word, the horror is from disuse of the innate power, and the sublimest pleasure may be found in excursions into the infinite.—Dr. George M. Gould.

### A New and Wonderfully Beautiful Rose.

The Greenwich Nurseries, Dehn & Bertolf, Proprietors, are placing in the market a climbing American Beauty Rose. It is the American Beauty in all its glory and fragrance but hardy as an oak, a prolific bloomer and a strong grower, thriving and blooming in almost any situation. They also have a Yellow Baby Rambler that was produced by Peter Lambert, the famous German rose grower, the originator of the Frau Karl Druschki and other well-known varieties. Lovers of roses should send to Dehn & Bertolf Greenwich, Connecticut, for circulars and particulars of these new and delightful things.

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### Frequent Touch with Photographers.

Rather than issue an elaborate bargain list once a year, Mr. Charles G. Willoughby has decided to issue such a list at frequent intervals. These will be important to our photographers. A recent issue entitled, "Latest from the Front," will interest every one who desires to know what effect the war is having upon photographic material. Mr. Willoughby is not making war on photographic materials, but he is constantly warring on high prices of anastigmats. He offers lenses that have been used but are really as good as new, at surprisingly low prices. Send for his circular and mention THE GUIDE TO NATURE.

---

### Three B Boys.

Bright Busy
Studious Industrious
Brave
Courageous

Encouraging Boys to "Make Their Mark."

Rev. C. Harley Smith, New London, Conn., has for some time used a Three B Boys' plan so satisfactorily with ten-to-fourteen-year-old lads that many other workers with boys are adopting it. A card which is given to each boy for signing and preserving contains manly maxims under the three divisions—Studious, Courageous, Industrious. The Courageous maxims, each of which may be used as a topic for a talk, are:

I will take good care of my body
I will be truthful and honest
I will be kind to animals
I will be an observer of nature
I will be fair with boys
I will show fidelity to girls
I will keep the Sabbath
I will not use bad words
I will not drink liquor
I will not use tobacco.

The fourth "I will" in this group was inserted at the suggestion of The Agassiz Association, and Mr. Smith seeks to interest all Three B Boys in reading and circulating THE GUIDE TO NATURE.

As many Three B Boys's cards as will be actually used are free to teachers or other workers with boys, or one card will be sent to any individual boy. This is not another organization, just a method to fit any organization or instructive for any individual. Reply postage is welcomed. Or if any boy or Leader will send two two-cent stamps, several cards will be mailed with one rubber-capped lead pencil imprinted with four lines standing at the head of this paragraph. The use of Three B Boys' pencils by adults stimulates interest in "horrid" boys out of whom *honorable* men are to be developed; and when used by boys are educative, for, as Furbush teaches, "Character is caught, not taught." Several thousand of these pencils are now in use though the idea is only three or four months old.

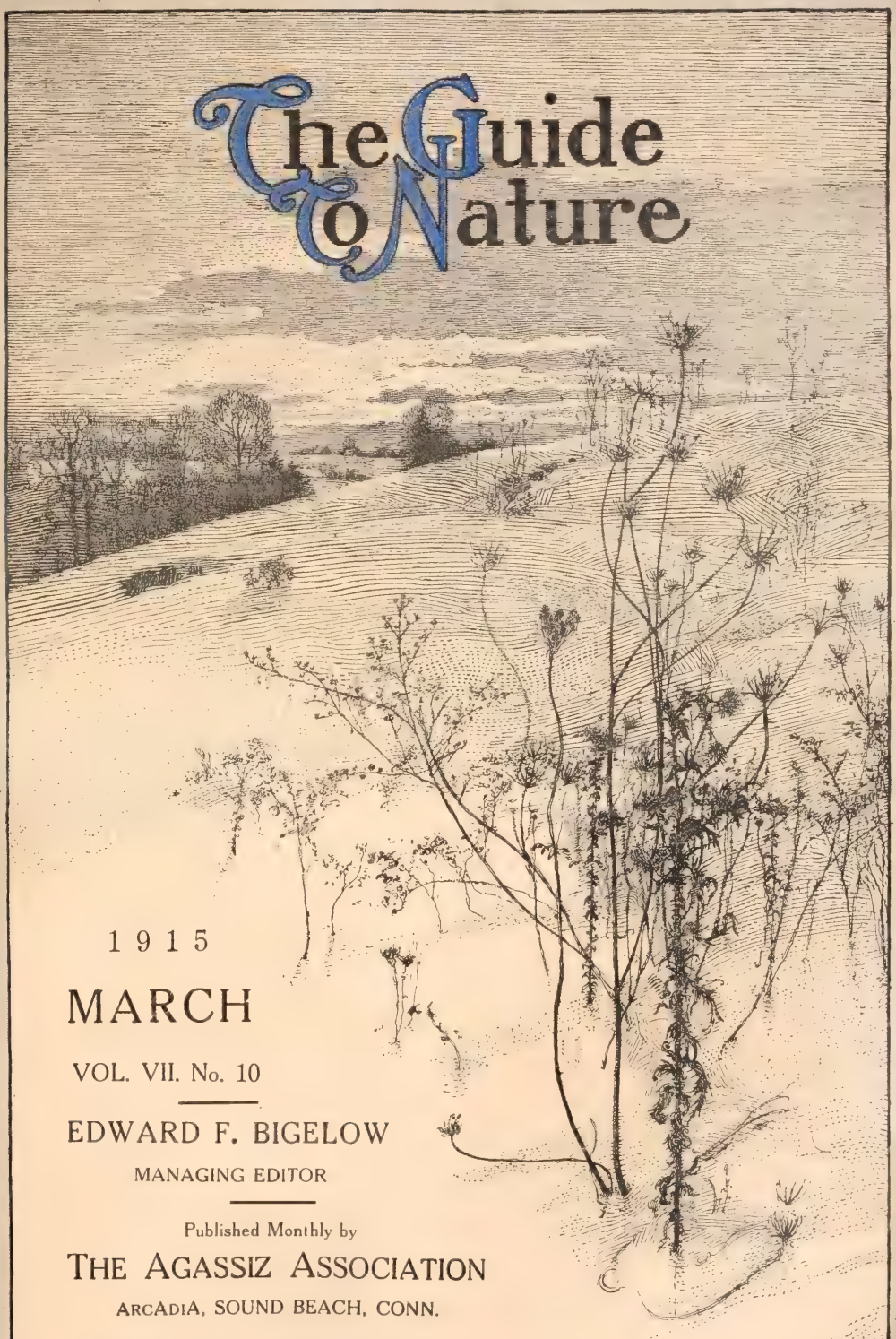
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We certainly admire the tone of THE GUIDE TO NATURE and wonder where you find enough people with such high sentiments, to make the venture pay. We dare say that the dividends would not be satisfactory to John D. You probably belong to that rare sort who, like Agassiz, "have no time to make money."—From a recent letter.

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It is well known that as a rule inventors are a sadly disappointed class; and when we consider the great waste of effort and resources entailed by patent litigation, it appears plain that the aggregate of rewards arising from the egoism of the inventor is much less than the aggregate of rewards arising from the altruism of the investigator. —Dr. R. S. Woodward.

# The Guide to Nature



1915

MARCH

VOL. VII. No. 10

EDWARD F. BIGELOW

MANAGING EDITOR

Published Monthly by

THE AGASSIZ ASSOCIATION

ARCADIA, SOUND BEACH, CONN.

Subscription, $1.00 a Year; Single Copy, 10c

Walworth Stilson

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# Ready for "The Burst of Spring"



THE LENGTHENING BUDS OF THE BLACK BIRCH.
The buds begin to swell and lengthen even before the last of the spring snow squalls.

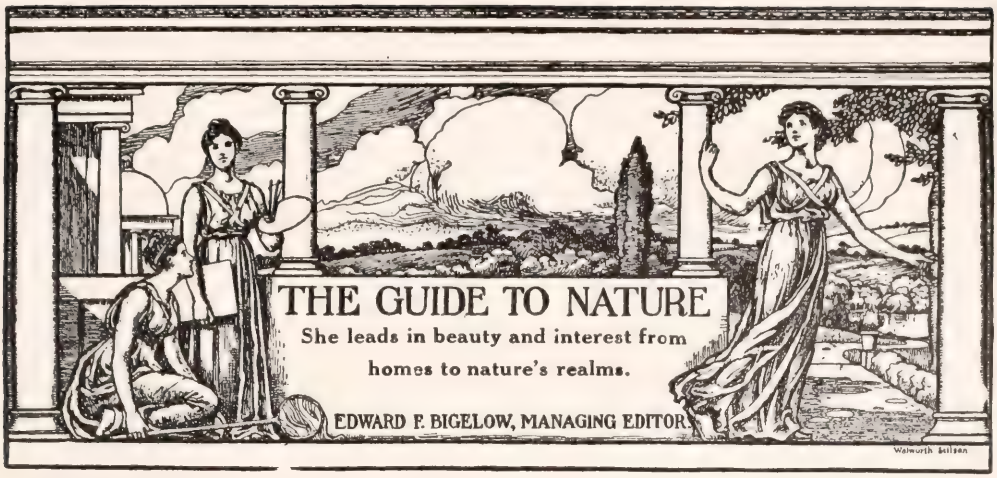
In winter when there are no flowers, and leaves are rare, even large buds are interesting and somewhat exciting. I go a budding like a partridge. I am always attracted at this season by the buds of the swamp pink, the poplars, and the sweet gale.—Thoreau.



THOSE FLUFFY FLAKES IN THE LAST OF THE SPRING SNOWS.



A CROSS SECTION OF FLOWER BUD OF POPPY.
From the top downwards: detail of center ovary; two overlapping layers; stamens and pollen grains, (large, wheel-like) ovary with ovules.




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut,
Subscription, $1.00 a year Single copy, 10 cents
Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII **MARCH.** Number 10

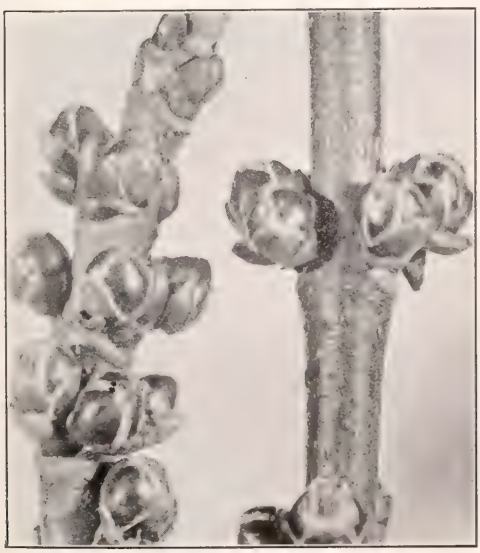
## Ready for "The Burst of Spring."

"What more can be said of buds? Has not every botanist had extended chapters in his text-book, every school journal its yearly repertoire of, 'how to study buds', and are there not innumerable leaflets for the study of buds issued by all nature study centers for dissemination of aids in nature study?"

Yes, every naturalist has said a great deal about buds since Thoreau, more than a half century ago, compared himself in his "Winter" notes to the partridge that goes budding as a sort of hardship fare in lack of more appetizing things.



IT'S A REAL "BURST."



BUDS OF RED MAPLE IN READINESS.

Perhaps Thoreau intended to eulogize the buds as he did his own wildness in comparing himself to one of

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THE LONG AND POINTED BUDS OF BEECH

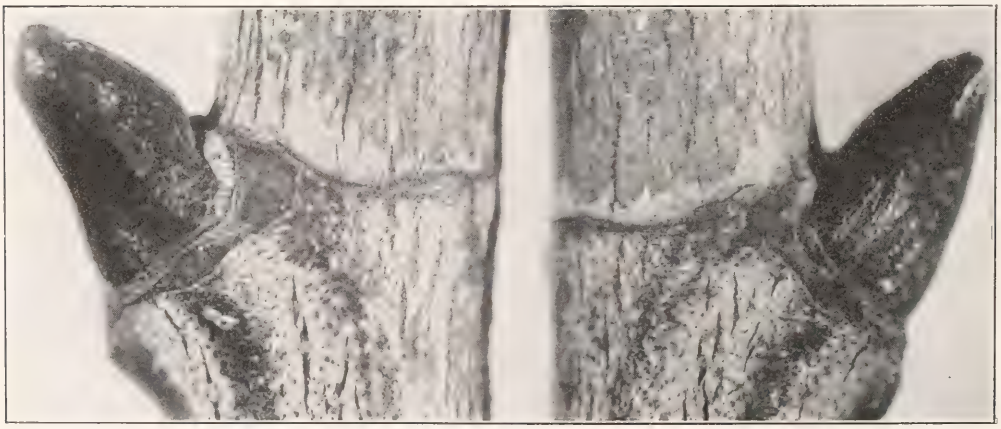
our shyest native birds that seeks "the most interminable of swamps."

Therefore in view of all the many things that have been so generally and so well said of buds in the last sixty years, and especially in the last ten, let us for the first time give the buds an opportunity on the printed page to speak for themselves and to show us their beauty. It is a strange fact that in no text-book on botany, in no article for teachers that has come to ARCADIA, are there any commendable illustrations of buds. The only exception is in some country or suburban magazine that occasionally has a decorative "Contents" photograph of the opening of those buds commonly known as pussy willows. These fluffy bursts of spring in the lowlands are interesting flower buds, but are not myriads of others as beautiful and interesting?

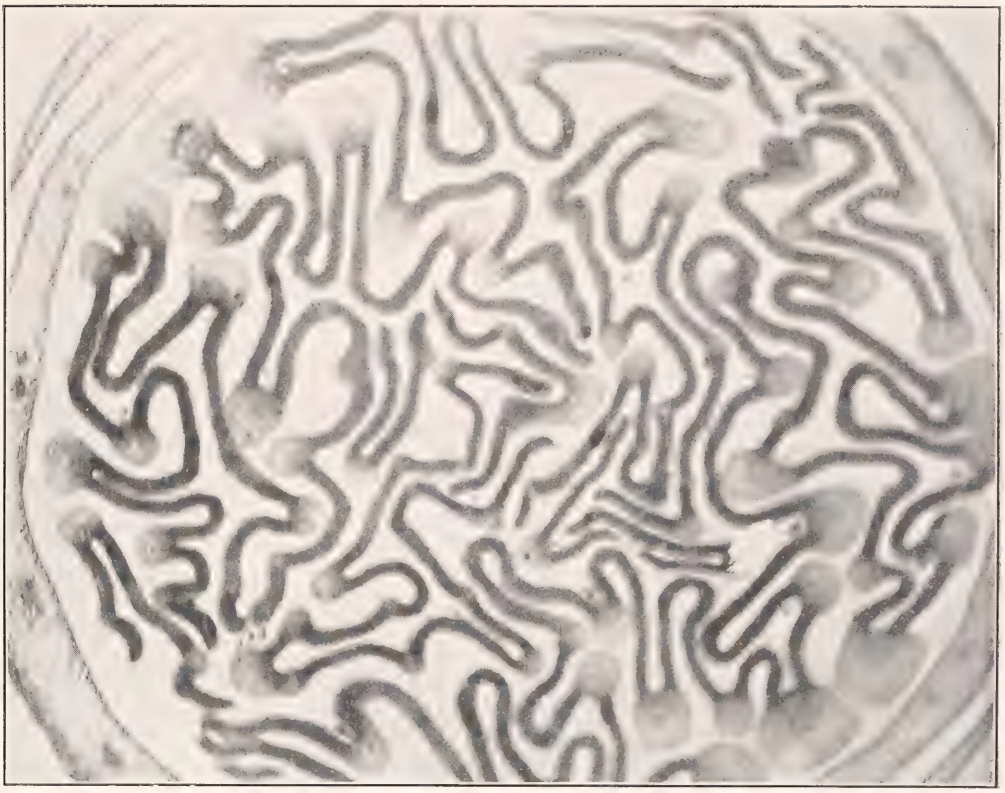
Coulter's and Bailey's textbooks of botany have clear, well written, interesting descriptions of buds, but the illustrations are not adequate.

Bailey's "The Burst of Spring," a Cornell nature study leaflet, is so vividly written and so full of the enthusiasm of spring that it makes one's heart beat more rapidly and induces one to turn his steps towards the woods in springtime. One must be dormant if he is not inspired by that leaflet, but the only photographic illustration is of four boys climbing a leafless tree, supposedly in search of buds, though they look as if they were merely posing for the photographer.

What are the best things that have been said about buds? For many years I have been collecting books, mag-



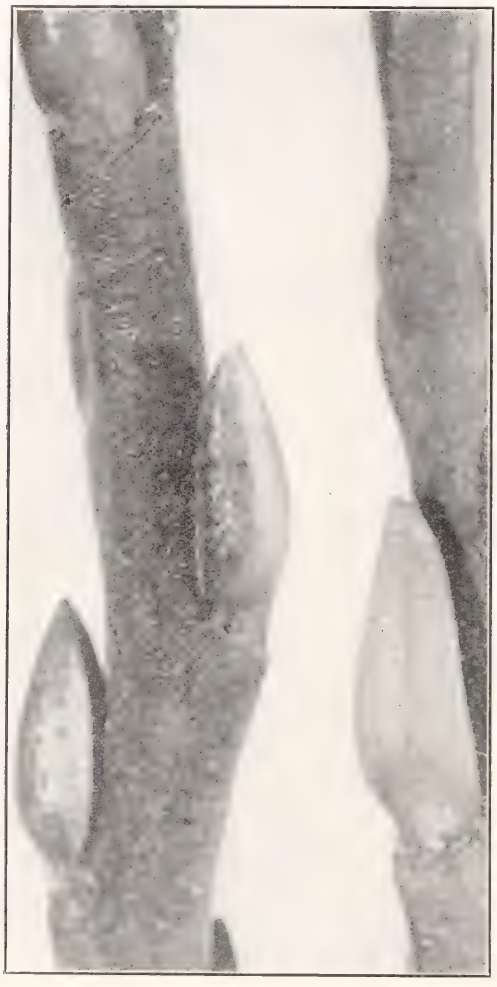
THE SHORT AND STUBBY BUDS OF THE SYCAMORE.
These are covered in summer by the leaf stems and exposed in winter.



THE INTRICATE PACKING OF EMBRYO LEAVES IN SYCAMORE MAPLE BUDS.



A STRIKING CONTRAST IN THE EMBRYO LEAVES IN WATER LILY BUDS.



LEAF BUDS OF WILLOW.

azines and leaflets that wholly or in part are devoted to buds; there is now at ARCADIA, as complete a collection as it is possible to make. All of these have been carefully assembled. On the long table before me are stacks of such literature. It is an exposition of bud literature, but I am not posing as an expert. I am only an amateur trying to tell what has interested and inspired me.

The question resolves itself into this: If there were now to come into this laboratory one not acquainted with buds nor interested in them and I wished to inspire him with a love of the subject what in this pile of literature should I hand him and say, "If you want thoroughly to enjoy an attractive phase of nature, read that?"

I have given a good deal of thought to that question and here is the result. It is the chapter, "Winter Buds," in "Among Green Trees" by Julia Ellen Rogers (Doubleday, Page & Co.). It is short, but poorly illustrated with crude sketches. It starts right and holds the interest. Here is the first paragraph. Read it and you will want more.

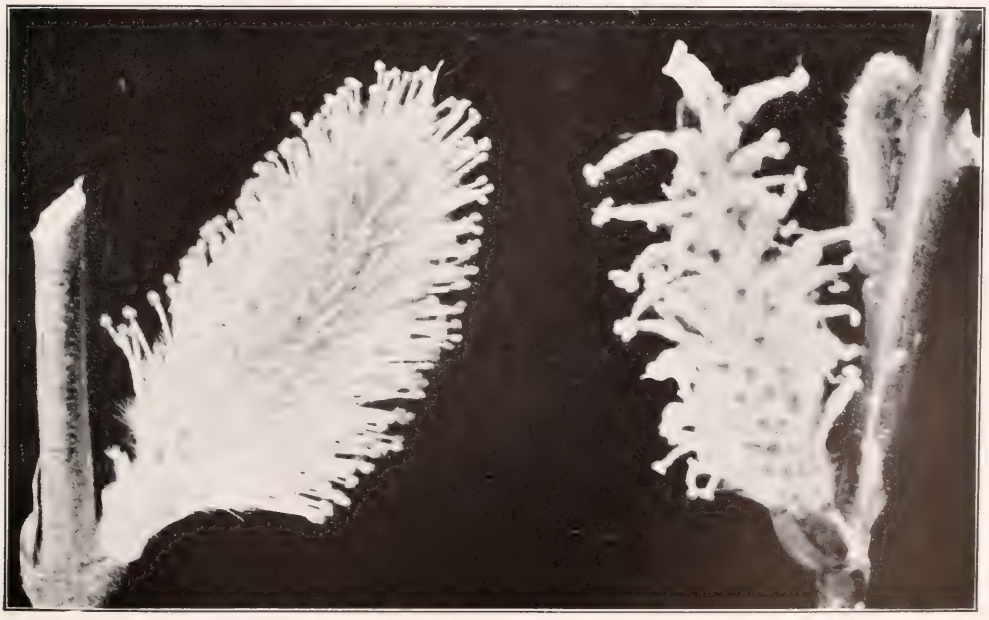
"The study of winter buds is a fascinating business. You may begin at any time after midsummer, for then the buds are well grown and the leaves are loosening their hold. Learn one at a time. Tear off a leaf or two from a familiar tree and notice the bud and the leaf scar. You will not forget. In winter you will find those well-remembered characters in the woods, and thereby know the tree that bears them. A new interest in trees will be roused within you. They are not dead things. They are only sleeping. Unsuspected beauties of form and color are discovered by you in winter buds. The various modes of wrapping and packing and varnishing by which the precious young shoots are protected from injury by wind and weather—all these are things that challenge your attention, and lead you into pleasures heretofore undreamed of."



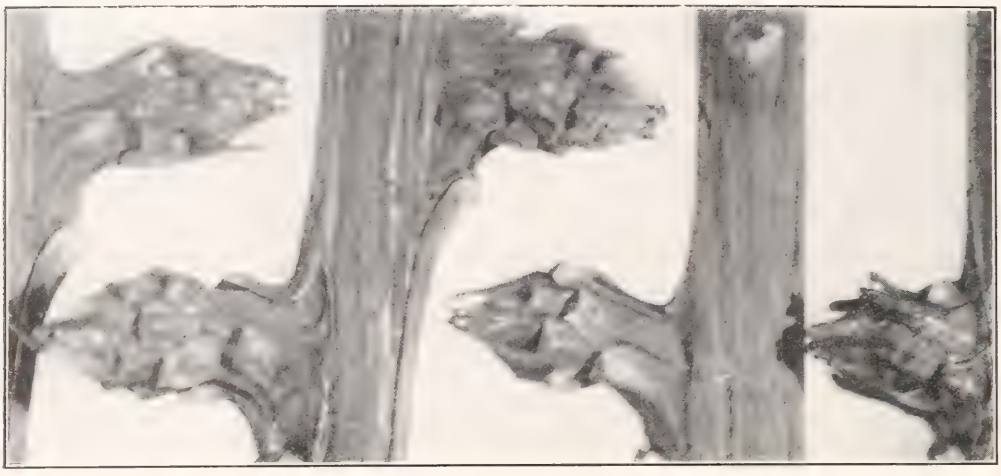
FLOWER BUDS OF WILLOW.



WILLOWS LEAD THE BUD PROCESSION.



MALE WILLOW. FEMALE WILLOW.



THE "RUSTIC" BUDS OF LARCH.

The chapter does not say all that might be said on the subject. It stops while the interest is keen. Neither the subject nor the reader is exhausted.

But suppose a teacher were to come in. Then I think I would hand her Coulter's "Plant Life and Plant Uses," (D. Appleton & Company, New York City). His chapter on buds seems a little better arranged and is rather clearer.

* * * * *

Now let us pass to the buds themselves. What is the one great interest in buds? Unquestionably their ingenuity of design. Buds are beautiful. Buds on their twigs placed in a vase of water in wintertime are conspicuously beauti-



LARCH BUDS ARE OF INTERESTING DETAIL.

ful in themselves, and especially so in that they prophesy of the charms of spring. It takes but little fancy to see the spring flowers in these bursting buds, and to hear the songs of birds. Buds tell us of youth and old age, for it should not be forgotten that buds belong to autumn and winter even more than to spring when they soon transform into flowers and leafy branches. When one considers their pent up power and their possibilities for the future, there is enough to cause a flood of poetic ecstasy, and when one looks backward a half century or more, a bud may cause an unexpressed shriek of joyous pain in the pathos of the long ago. Only those far removed in time and place from childhood's days in winter woods with the woodchoppers, playing with buds and twigs as a modern child plays with costly toys, can ever know that pathos. Alas! How much are you to be pitied if you know buds only from the botanical or esthetic point of view. O botanists, you are wrong when you say these buds are pent up only with leaves and flowers of the plant. Probably you do not know that they are condensed memories.

But more important than this is the brain of the bud. It thinks, or rather it gives evidence of Thought. It is one of





AT RIGHT: GUMMY BUDS OF HORSE-CHESTNUT ON SCULPTURED TWIGS.
BELOW: THE BEGINNING OF HIGH BLUEBERRY BROWSE. GOOD TO EAT!





PRECOCIOUS BUDS OF LILAC.
Upper: leaves. Lower: flowers.

the most marvelous storehouses in the world. Even an egg does not equal it, because eggs are of simpler and less varied designs. An egg must be coddled and cared for; it will not even stand a chill. But look at the bud. It is a marvel of tenderness and of hardiness—so fragile and delicate, yet within it is the potentiality of a tree that may endure for centuries. It is a marvel of skill. Herein is marvel for a lifetime. No words can adequately protray the marvelous ingenuity that placed so much within so little. You must see for your self. Do not be content with one kind. Peer reverently into many of these marvels. Gather them freely in your walks in winter woods. Take

### Freezing Fruit Buds.

What is meant by the freezing of fruit buds in winter, by which the peach crop is so often lost in Northern States? When spring opens, the warmth of the air wakes the sleeping buds. It thaws the ice in the intercellular spaces, and the cells are quick to absorb the water they gave up when winter approached. The thawing of the ground surrounds the roots with moisture. Sap rises and flows into the utmost twig. Warm days in January or February are able to deceive the tree to this extent. The sudden change back to winter again catches them. The plump cells are ruptured and killed by the "frost bite."—Julia Ellen Rogers



THE BUDS OF THE SKUNK CABBAGE DO NOT WAIT FOR SPRING BUT PUSH UP THROUGH THE SNOW.
Drawing by W. L. Peecroft, Adams, Massachusetts.

them to a convenient and well lighted table, and with a sharp knife, slender tweezers and a simple microscope, cut and search. See these wonders at first hand. Never mind the clock. What is Time when you are studying the work of the Infinite?

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### Editorial Acknowledgements.

The photomicrographs of cross sections of buds of poppy, water lily and sycamore maple are from slides by Mr. J. B. Howard, 45. Frenchgate, Richmond, Yorks, England.

The photographs of snow and icy brook scenery were taken with an imported Zeiss Protar from E. B. Meyrowitz, Inc., New York City.

### Trees Inherit Form.

From the Forest Experiment Station near Zurich, in Switzerland, comes the report that crookedness of trunk in a parent Norway spruce is repeated in at least half the seedlings grown from it. Practically, therefore, it becomes highly important, in all attempts at reforesting, to take seed only from straight trees. Otherwise the new growth is likely to be gnarled and twisted. Evidently we must no longer be satisfied to take seed from trees as they come, but must select only the best growth of each old stand to propagate the new, and be as careful with our forest seed as we are with our garden seed.

# Warfare as Natural History.

**From the advance pages of a book entitled "To-morrow's Topics" by Dr. Robert T. Morris, 616 Madison Avenue, New York City, to appear from the press of Doubleday, Page & Co., New York, in May.**



HAT of the future? We may judge from the past! Tribes will destroy other tribes. Nations will destroy other nations.

Shortly after the sound of the great 1914 explosion was heard, a statistician reported that fourteen different wars of more or less interest to civilization were under way. We pay little attention to conflicts which do not interest us personally. The world as a whole looks with passing thought upon impersonal wars in Venezuela, Haiti, Tibet, Mexico, Algeria or Rhodesia. Could the sound of all wars be brought within one hearing distance, it would make a perennial hum like the monotonous murmur of a great wheel in the shop.

All of this vibration belongs to the shop of nature which is engaged in turning out products of evolution. The resultant of the parallelogram of opposing forces carries winning varieties of men to higher position in the social scale.

Frederick the Great calculated that warfare by arms would recur about once in five years. By this he presumably meant wars of special interest to Europe. My own memory of conflicts extends back clearly for about fifty years only, but during that time we have seen our Civil War, the German-Austrian, Franco-Prussian, Servo-Bulgarian, Turco-Russian, Spanish-American, Anglo-Boer, Greco-Turkish, Russo-Japanese, Italo-Tripolitan, Balkan, and the present European war. That would make the incidents rather less than five years apart, and would leave out of our calculations a much larger number of lesser conflicts belonging to more distant countries.

The doctrine of struggle belongs then to the philosophy of one side of the question.

Opposed to the doctrine of struggle in nature, we have the other doctrine, that of dependence of one organic form upon another organic form. These two doctrines represent forces which are observed to be everywhere opposed to each other, in accordance with the method of court procedure under the *codex* of natural law

Treitschke teaches that might is right, and this idea carried to its logical conclusion would result in there being but one man left in the world, and he with a wife who would require to be killed in the interest of permanent peace.

Instead of the Treitschke idea, I would inculcate the principle of mutual dependence, when it comes to a question of prognostication concerning man's destiny.

In the higher reaches of intellectual work of man as moral agent, (if we may employ that metaphysical expression) to-morrow's nations will engage themselves largely with the mutual dependence doctrine of Darwin.

Taking a walk through Forty-Second Street, from Fifth Avenue to the Grand Central Station, and passing a rather representative mixture of people, one will be impressed perhaps by the quantity rather than by the insignia of moral agents who are in evidence. Yet, if certain publications have recently decided to deprive themselves of the income from mendacious advertising, we may fairly hope that the leaven of such a spirit will eventually lead whole nations to deprive themselves of the power that results from profitable murder. When the First Commandment has been broken, the other Commandments ravel loose pretty rapidly among the people of a country, and some time is required for gathering up the tangled ends again, before the warp and woof of civilization can be thrown evenly for an attractive pattern.

Nations come and go, breaking upon the shores of Time like waves upon Old Ocean's gravelly beach. In accordance with the law of continuity applied to everything in nature, nations

are similar to varieties of plants. Nature retains her great vested fund of protoplasmic energy in a race. Mutant forms emerging from any race. from time to time, expend their special loans of protoplasmic energy rapidly and then disappear, while the racial mean type persists. Protoplasmic energy runs out of a species more rapidly than it runs out of a genus, and a variety loses energy more quickly than it is lost to a species. Nature places many checks against the exhaustion of race energy, but she allows nations (varietal hybrids) springing from any one race to make cross combinations exhibiting various degrees of power. The great vested fund of protoplasmic energy belonging to the *Solanaceae* is represented in a branch bank belonging to the species potato. Species of wild potato retain mean type without much variation, for centuries. Varietal hybrids of potato on the other hand make remarkable display wastefully, and then run out of their loan from the energy bank. Varietal hybrids do not as a rule make such wasteful display of energy as that which is made by crosses between species. We assume that a more violent rending of checks upon cellular activity has been caused by the crossing of species. Varieties being more closely alike, are crossed with a lesser degree of disturbance of isomeric enzymes, or of stereochemic process acting over the molecular distances in cells. Puritan and Cavalier were varietal Aryan hybrids. Prince Daniel at the Kremlin was a varietal hybrid. These represent durable dominant forms. Mexico, however, is largely populated by specific hybrids. Aryan (Spanish) and Mongolian (Indian). In the absence of an external compelling force we may anticipate that a series of short, sharp revolutions will occur for centuries to come in Mexico, excepting when some remarkable mutant like a Diaz executes aspirants for domination who ask questions, and makes inquiry into the nature of questions subsequently to the execution of questioners. Specific hybrids of *Homo sapiens* have been under observation by the biologists for a long time in the examples furnished by Eurasians. Specific hybrids among men do not appear to carry a "cenesthesia of similarity" which allows them to unite for purposes of mutual protection in established government. As violent variants, they expend protoplasmic energy individually, explosively or indolently, and not according to durable mean-type method. The educated men of Mexico are as brilliantly and charmingly civilized, as the uneducated classes are indolent, in the other extreme. A strong dominant mean type of citizen does not belong in biologic category to Mexico. The desire of indviiduals, to conquer, will be stronger than the desire of a whole people, to govern.

A varietal hybrid type of man, and his prototype congeners (Guelph, Hohenzollern, Hapsburg, Romanoff) form a dominant group of people for the brief period of a few centuries, and having engaged successfully in struggle, pass on to the period of senescence of protoplasm and then disappear, to be replaced by other strong varietal types which have sprung from racial protoplasm.

A nation of people fitted for civilization passes through Eras of Three E's, corresponding to the development of a variety of cultivated plant. The first E stands for establishment (force of arms and of diplomacy). The second E stands for expansion (analysis and development in science). The third E is that of exhibition (art and literature). Then comes decline. The history of a cultivated plant may similarly include establishment after struggle with competing plants, and aided by the gardener. High degree of development of the plant comes next, and finally there may be exhibition of double flowers, and the lineage of that plant is ended. The reason why cultivated nations come and go like varieties of cultivated plants is because both are composed of protoplasm and must follow the inexorable laws of protoplasm.

Aristotle and Polybius described civilization as following three steps in a nation. The period of barbarism, then democracy, then aristocracy, and reversion to barbarism again.

Success of a nation depends upon its breeding capacity fundamentally. Apartment houses built without accommodations for children are vases for flowers in theme, quite as distinctly



THE ROCK AT THE FOOT OF THE GARDEN.
"Odd folks belonging to some strange new nation will come and sit upon the rock at the foot of my garden two thousand years from this coming June."

as cathedrals are for purposes of worship in theme. The relative proportion of childless apartment houses, in comparison with prolific homes, will serve as a water gauge, indicating what is in the boiler of a nation.

Not far from the present time the Jews with their fine intellectuality are apparently to supplant Aryans in America. We arrive at this conclusion after a study of birth-rate statistics. If one has not as yet perceived signs that

the Jews are to supplant Aryan stock here he may ride down Broadway for five cents, and read the signs.

Judging from a basis of biologic history Slavs are to succeed the Jews.

Odd folks belonging to some strange new nation will come and sit upon the rock at the foot of my garden two thousand years from this coming June.

Warfare between the more important civilized countries will be longer and longer postponed, because of the development of Dr. Butler's "International mind." Primitive plants gradually developed a system of sap channels which enabled them to become greater and more complex plants. In the same way nations will gradually develop sap channels of trade. Negative and positive pressures under varying conditions of light and of temperature serve to keep the nutrient sap flowing through the widely distributed channels of a plant. Among nations the positive and negative pressures of debt and credit will serve to keep international mind flowing freely through the trade channels of nations.

We are to hope that socialism and capitalism will never gain any great number of points over each other, because they represent two necessary opposing forces, belonging to the "warfares of peace." We must be allowed to read our newspapers and smoke our pipes comfortably while finding interest and amusement in the hot words which pass between fairly well balanced forces of socialism and of capitalism. Warfare by arms will exercise a certain degree of control over population in the future as in the past. Control of population however is chiefly given over to one of nature's agents, the microbe. During times of peace the microbe is chief regulating agent. Even during times of war it kills more people than are killed by missiles. In one of the South American countries two species of microbe carry off thirty per cent of the entire population, and there are other countries in which three or four species of microbes claim a still larger proportion for their prey.

Nature is presumably quite as much interested in her favorite microbe agents as she is in man, and this feature of warfare between the two is commonly overlooked, although of greater importance than warfare by arms between men of different nations. Among the warfares of peace which exert influence over population, feminism in its present crude stage is not to be omitted from the factors in our equation. To-morrow's nations may take charge of that particular subject in another way. In former days feudal barons actively lessened population, and to-day it is passively lessened by feudal barrennesses.

In ancient Egypt and Greece women came to have practically all of the freedom of men in matters of government. Breeding came to a pause and the state fell. These were not cause and effect phenomena, but collateral phenomena belonging to the history of a variety of nation, and similar to the history of a cultivated variety of plant. When the sex cells go over to make soma cells, a plant may make beautiful display with double flowers, and thus end its lineage in a blaze of glory.

Herod set an example of economical method in warfare when he ordered the slaughter of infants. Taxpayers at some time in the future may revolt against the high cost of dying in modern wars, and we shall perhaps find simpler method displayed in something like The Ammonia War. Each soldier will be equipped with a tube of liquid ammonia, and a back load of handcuffs. A little biff of ammonia in the face of an enemy will render him helpless for a long enough time to allow of the adjustment of a pair of handcuffs. The side which succeeds in handcuffing the largest number of opponents will be triumphant, but the winners will find themselves to be losers because of the cost of maintenance of a large body of idle prisoners. This outcome will not be very different on the whole from the outcome of less thriftily conducted wars, because both sides must necessarily be losers according to well established principles in economics. The Ammonia War will have the advantage of being a more polite war than any which is now conducted by us murderers.

Different nations engaged in warfare pray to one God who is therefore a garbled God. Prayers are based upon the justice of respective causes. In

order to trace the phylogenetic meaning of injustice we need go no farther back than to the paleozoic example of Allosaurus pouncing upon astonished beasts that were behaving themselves with propriety according to the very best of Mesozoic standards, although these very same beasts were largely engaged in pouncing upon other beasts. It is true that still earlier injustice is represented in the failure of certain inorganic elements to obtain good position when responding to The Periodic Law, and a still later and more familiar example is observed in the act of a bluefish swallowing a herring.

No one country is more responsible than any other one country for the present European war. It is the culmination of effort between two chief dominating types of varietal hybrids, each seeking to exercise supreme control over the other in response to dictation by natural law. Germany happened to start just in advance of the word "Go!" because she had first reached the limit of human endurance, a purely psychological phenomenon. Resort to arms means bankruptcy of diplomatic resource, although Germany's assets in culture represented a sum total in progress that is not equalled by the assets of any other nation at the present time.

We must remember that even Jesus reached the limit of human endurance, and entered voluntarily into warfare. It was when He found the money changers in the Temple. There will always be money changers in the temple.

The Prince of Peace, the Jew, the democrat, taught however that the law of mutual dependence is more desirable for moral agents than is the law of struggle for supremacy.

When the present war is over, nothing will have been gained excepting nature's points of limiting population in the interest of food supply, and the trimming back of exuberant new growth that was approaching cultural limitations too rapidly. Culture under conditions of peace leads animals and plants quickly to their protoplasmic limitations. In the case of man, breeding is inhibited, and there is marked increase of insanity, genius, tuberculosis, worklessness, cancer, and high cost of living. The bell rings midnight, and a new nation comes in the morning.

To-morrow's nations, taking up the subject from its biologic basis, and understanding its terms will so conserve and direct the expenditure of energy of a nation that men will attain to a higher mental and physical planes than have been reached by people of the rather wild growth of nations that has "flourished precariously" upon the earth up to the present time.

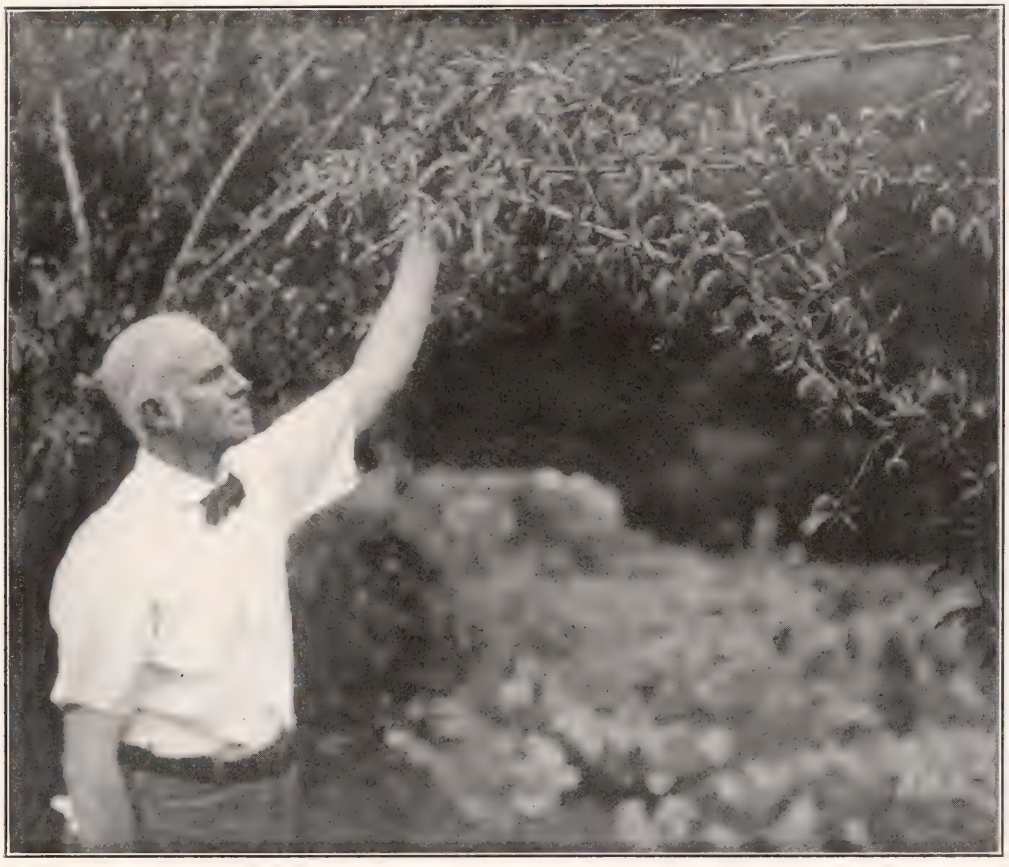
Further than that, the Secretary of Eugenics in the Cabinet of The Monistic Unity State, who is to be engaged in the duty of placing certain selected nations in alignment for the purpose of obtaining particularly promising hybrid combinations, will amuse his children gathered about the atomic lamp after dinner, by reading to them the history of sentimental objections that were raised against the simplest of family eugenics away back in the twentieth century.

Man in his present semi-domesticated condition is the only animal that is persistently engaged in destroying his own kind. This he does because he has not as yet learned what to do with the surplus population under present methods of living. He calls it an act belonging to higher intelligence. The poet cannot help him, because the poet can only join Milton in asking "what can war but war breed?" The preacher cannot help him, nor can the teacher if we may judge from the fact that five minutes after the sound of the 1914 war was heard, not one preacher or teacher remained with his head an inch above the level of the ground of his own country. At the first alarum preacher and teacher skurried back under the cover of their financial protectors, and from that point of vantage barked vociferously at the enemy. Apparently Science is to give the last message to man. It will not attempt to explain upon which side of a conflict the soldiers are in a state of grace. It will simply give man a statement of his case, and man may then develop divinely in the sunshine of that full sympathy which belongs to brotherly love incited by Darwin's doctrine of mutual dependence.

### Editorial Note.

The editor once had occasion to catch Dr. Morris at an occupation which he considers to be superior to warfare, and reproduces a photograph, then taken, in connection with this article.

ing bird houses and thousands of other topics pertaining to farming and to country life. It is astonishing to note that so prominent a man as Senator McLean is supplying so much detailed information on many nature topics.



DR. ROBERT T. MORRIS HOLDING A BRANCH WELL LADEN WITH ALMONDS.

### Building Bird Houses.

Every one that loves birds should write to Senator George P. McLean, United States Senate, Washington, D. C., for a copy of the pamphlet on bird houses and how to build them. He will also send a list of various outdoor bulletins from which a selection may be made. In fact we are inclined to think that Senator McLean will be glad to give information on almost any nature topic. He is one of the most enthusiastic and energetic Members of The Agassiz Association. He is doing much to extend the work of the AA. Get into correspondence with him. He is a busy man but never too busy to give attention to an inquiry regard-

### Color Inheritance in Plants.

Recent studies of inheritance in plants make it appear that the green coloring matter of the higher vegetables is not really "inherited," in the sense that the outline of leaf or the quality of fruit is. On the contrary, the pollen parent seems never to make any contribution to the chlorophyll of the seedling, which arises entirely from the maternal body tissue and not at all from either parental germ. The "Inheritance" of green color in plants, is, therefore, of the general nature of the so-called "heredity" of disease among animals and men. That is to say, it is not proper germ inheritance at all.

# THE STARRY HEAVENS IN MARCH

By Professor Eric Doolittle of the University of Pennsylvania.

THE brilliant winter groups have now begun their steady declension toward the west. We see the great Dog Stars already well past the meridian in the early evening, while Orion, Taurus and Gemini are nightly sinking lower in the western heavens. Already he welcomes the return of Virgo, the first of the faint summer groups, while north of this he sees the great Bootes, which, with its most brilliant Arcturus, has now wholly entered the evening sky.

He knows that when the warm evenings of June have come he will see this beautiful golden sun high on the meridian in the south, while below it there

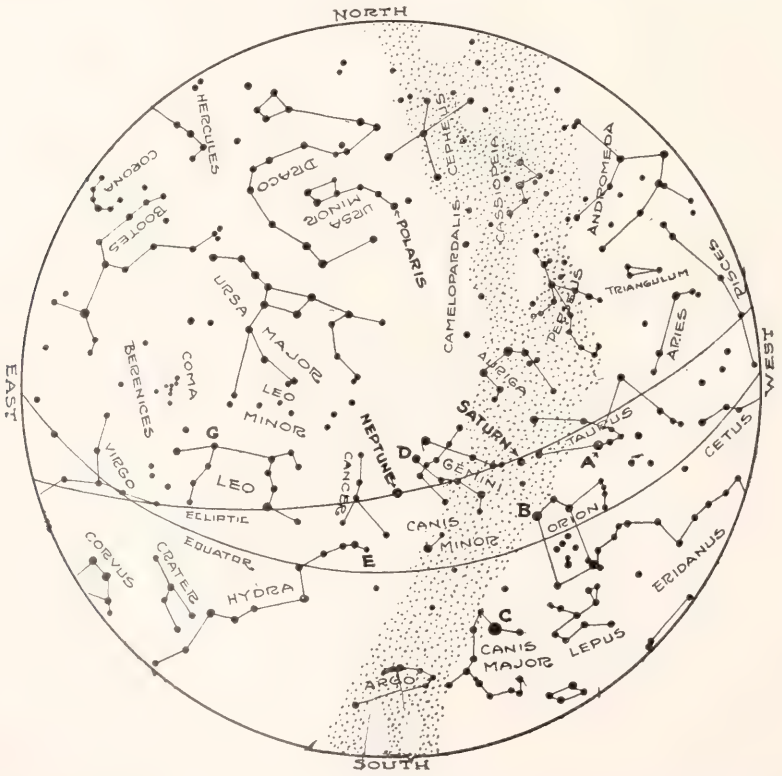



Figure 1.—The Constellations, March 1, at 9 P. M. (If facing south, hold the map upright; if facing west, hold west below; if facing east, hold east below; if north, hold the map inverted.)

It is only Leo, the last of this bright train, that is still mounting upward towards its highest position in the sky.

All of this tells the watcher of the heavens that the end of winter is at will shine the bluish Spica, the brightest star of Virgo, and the deep red Antares, neither of which beautiful objects have yet quite emerged from below our eastern horizon.

### Telling the Time by the Stars.

One familiar with the general appearance of the heavens can thus read from them at a glance what the season of the year is, and he welcomes the appearance of certain stars which herald the near approach of spring or summer or autumn. This, though interesting, is, of course, of but little practical value. Were the observer lost, and without a compass, he could also very easily tell the direction of true north, since the Pole Star is always exactly north of him; by therefore facing Polaris and stretching out his arms he would easily fix the four points of the compass at all times.

How to make use of our knowledge of the heavens in these ways is probably known to all of the readers of this article, but a far fewer number of those who study the stars know how easy a matter it is to determine the time from them.

To do this it is first necessary to know what is called the Right Ascension of a few of the southern stars of the Celestial Sphere. This so-called Right Ascension of a star is measured on the surface of the Celestial Sphere in almost exactly the same way as the longitude of a place is measured on the surface of the earth. It may be found for a selected number of the brighter stars from almost any astronomy, or from the American Nautical Almanac, or it may be measured from any star atlas. For example, the right ascensions of several of the bright stars now found in the southern heavens are as follows (the letters refer to Figure 1):

| | | |
|---|---|---|
| Aldebaran, at A, | 4 hrs. | 31 min. |
| Betelgeuze, at B, | 5 hrs. | 51 min. |
| Sirius, at C, | 6 hrs. | 41 min. |
| Pollux, at D, | 7 hrs. | 40 min. |
| Delta Hydrae, at E, | 8 hrs. | 33 min. |
| Regulus, at F, | 10 hrs | 3 min. |
| Delta Leonis, at G, | 11 hrs. | 10 min. |

The right ascension of any star remains practically the same for many centuries, but to tell the time of night we need also the right ascension of the sun, and this is continually changing. It may be found for any day of the year in many almanacs, or we may determine it as follows:

On March 21 the right ascension of the sun is 0 hours, and it increases one hour every fifteen days thereafter; thus on April 20 it is approximately 2 hours, on May 20, 4 hours, and so on, reaching 22 hours on February 19 and 23 hours on March 6.

If now we find the difference between the right ascension of the sun on any date and that of any star, this difference will be the number of hours which will elapse between when the star was seen on the meridian and when the sun will be found there; as we know that the sun is always on the meridian at noon, the true time when the star was on the meridian is at once known.

This brief description has been inserted at the request of several different correspondents; it is hoped that the reader will not be deterred from reading it by the slight reference to mathematics which it involves, for the process is really very simple and easy indeed and the ability to read the time of night from the ever-turning dial above us is always most pleasurable.

### Illustrations of Finding the Time at Night.

Suppose that on the evening of March 21 the observer saw the bright star Regulus due south of him, what would the time be? Since on March 21 the right ascension of the sun is 0 hours since that of Regulus is always 10 hours and 3 minutes, the star will come to the meridian 10 hours 3 minutes later than the sun. It would therefore be 10 hours 3 minutes P. M.

As a second illustration, let us inquire at what time the star at G, Fig. 1, will be seen due south of the observer on April 5 and on April 20. The right ascension of the sun on April 5 is 1 hour; that of the star is 11 hours 10 minutes; the difference is 10 hours 10 minutes, and therefore when the star is seen due south on this date it will be 10 hours 10 minutes P. M. And on April 20 the right ascension of the sun is 2 hours, the difference is 9 hours 10 minutes, and the time will be 9 hours 10 minutes P. M. This illustrates the well-known fact that the stars rise, come to the meridian, and set just one hour earlier every two weeks.

After acquiring a little practice the observer will not usually wait until the

bright star whose right ascension he knows has actually reached the meridian. Bearing in mind the right ascension of the sun at the time of the year he might perhaps estimate that the star was an hour to the left or to the right of the meridian. The time found by mentally subtracting the right ascensions would then be one hour later than the true time in the first case and one hour earlier in the second. Soon he will find that a mere glance at the heavens suffices to tell him the time, at least approximately.

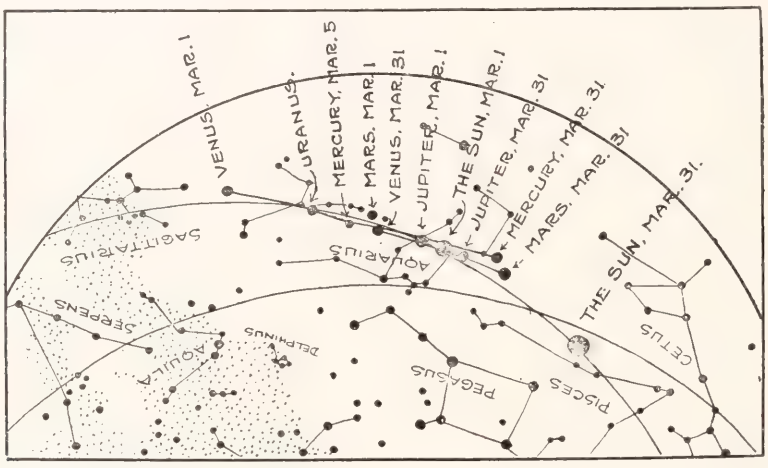



Figure 2.—The morning sky to the west of the sun, showing how no less than five of the planets are now moving through this region.

### The Planets in March.

All of the bright planets except Saturn are now morning stars.

Mercury, which entered the morning sky on February 21, reaches its greatest distance from the sun on March 20 and for a few days before and after this date may be seen shining in the dawn, far to the south of the east point.

Venus is still brilliant in the morning skies, rising about two hours before sunrise throughout the month. At the beginning of the month it is far below the celestial equator but it is moving rapidly northward and its point of rising on the horizon is continually approaching the east point. It will cross the equator and then begin to rise north of east on April 28; it will enter the evening sky on September 12.

Mars is even nearer the sun than Venus and is therefore in a very disadvantageous position for observation. Throughout the month it rises in the southeast about one hour before sunrise.

Jupiter entered the morning sky on February 24 and is far too near the sun to be observed toward the beginning of the month, though by March 31 it rises nearly an hour before sunrise.

All of these four bright planets, as well as the planet Uranus, are now crowded into one small region of the sky which would be by far the most striking and interesting part of the heavens were it not that the sun is also very near this region and, by his overpowering brightness renders a satisfactory study of these planets impossible. Their positions and motions throughout the month are, however, shown in Fig. 2.

Many interesting conjunctions and configurations occur during the next few weeks among these closely neighboring worlds. Thus Venus passes to the east of Uranus on March 19; Mars passes very close to Jupiter on March 23; Mercury passes to the east of Jupiter on March 29, and to the east of Mars on April 3. At the conjunction of Mars and Jupiter the two planets will appear to be separated by a distance equal to only one-third of the distance across the moon. This would form a most beautiful sky figure were the two worlds not so nearly lost in the rays of the sun.

The planet Saturn is still high in the heavens, almost on the border line between Taurus and Gemini. It is thus in excellent position for observation, and is a beautiful object in a moderately

large telescope. During the past few weeks the shading of its south polar regions and the indefinite, reddish bands about its ball have been unusually prominent, while the shadow of the ball on the most distance side of its rings is now very easily seen. As this whole great world is, however, doubtless still but a ball of vapor, the shapes and extent of its surface markings are continually changing.

### Is Truly Missionary Work.

BY PROFESSOR ERIC DOOLITTLE OF THE UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA, PENN.

**I am most glad that you plan to add an astronomical telescope to your equipment at ArcAdiA,—and I am sure that the visitors will find the infinitely great fully as interesting and as full of wonderful things as the infinitely little. It is indeed surprising how very little the average person knows about the things in the sky above us,—though I see that you make frequent reference to the fact that he knows also but very little about any of the interesting things of nature. Work such as you plan is truly missionary work,—and I wish you all success in it.**

### A Psychological Problem!

**$25 REWARD.**—The above amount will be paid for information which will lead to the arrest and conviction of the party or parties who cut down and carried away an Austrian pine, about twelve feet in height, from the hill to the west of my farmhouse on the Westover Road. Probably taken for a Christmas tree. Name of informant will not be revealed to others. Every year when I advertise a reward in connection with the theft of my ornamental trees, I find that neighbors seem to know pretty well who the guilty party is, but they are disinclined to inform upon each other. This leaves a number of people under suspicion, and I hope they will allow me to concentrate attention upon one.—Robert T. Morris, Coscob, Conn."

* * * * *

The above appeared as an advertisement in "The Stamford Advocate." It brings up several psychological problems, and the more one studies the situation, the more puzzling it appears. That one of these beautiful and very expensive trees grown for scientific purposes should have been so admired that it was killed is, from the naturalist point of view, astonishingly sacrilegious. Add to that the fact that the tree was stolen to celebrate the birth of Christ, and the problem becomes stupendous!

Studies made for the German army on the work involved in marching, show that it actually requires more work, up to nearly ten per cent., to loiter languidly over the road, than to cover the same distance at a sharp pace. It also takes more work to walk over-fast; but if each one has a medium gait, moderately fast, that is most economical.

### Spring.

The spring and rain and sun
  Are artificers old,
That change to fairy realm
  The brown earth, bare and cold.

Far down in silent depths
  The miracle begins,
And, reaching toward the light,
  Persistently it wins.

Upsprings a tiny shoot
  Of green in garden beds,
And straightway to the hills
  The transformation spreads.

With beams of myriad tints,
  Comes spring to light the way;
The January world
  One would not know in May.

—Emma Peirce.

### LITERARY NOTE

Bird-Lore for February contains the results of the Christmas Bird Census which this magazine inaugurated fifteen years ago as a humane substitute for the old Christmas 'Side Hunt.'

From the Atlantic to Pacific, from the Gulf of Mexico to Canada, observers go afield on this day in keen and friendly rivalry, armed not with guns, but with field-glasses. The record 'bag' was made by W. Leon Dawson at Santa Barbara, California. Mr. Dawson recorded 107 species, doubtless a greater number of birds than have before been seen on a single winter day in North America.

A portrait of Mrs. Russell Sage with a note on the aid she has given the cause of bird protection, the second part of Robert Ridgway's studies of bird-life in Southern Illinois, colored plates by Fuertes and Brooks, and dozens of photographs of birds in nature go to make up this 90-page number.

# The Nature Photographers

### March Brook Photography.

In the early part of March, or later if the weather continues cold, is the best "open season" for camera hunting in the brooks. Water and banks are then in the most picturesque condition of the whole year.

But who can explain those marvelous fairy castle formations on the overhanging banks, or the still more puzzling cakes of ice held by far drawn down, slender branches? What pulls down these branches, and why does the ice so persist when attached to the twigs? Sometimes in places of deep, comparatively still water a slender limb will hold a large field of ice.

We invite camera studies and careful observation to explain these beautiful and queer formations that "play" up and down the stream, pulling on the branch and tree as a huge fish might pull line and pole.



CAKES OF ICE HELD BY FAR DRAWN DOWN, SLENDER BRANCHES.



THE ICE DECORATIONS OVER THE SPRAY CONTEST.



WITH A DASH AND A SPLASH AMID GLITTERING ICE.



THE GLINTINGS OF THE SUN ON THE DASHING WATERS AND THE SNOW AND ICE DECORATIONS TEMPT THE CAMERA.

# RECREATIONS WITH THE MICROSCOPE

**Edited by Dr. V. A. Latham, 1644 Morse Avenue, Rogers Park, Chicago, Illinois.**

## Come With Us.

How to make the microscopical department of this paper of most interest to the greatest number is our problem. To please all will be out of the question, but we will do what we can to make it helpful. Let readers send in their opinions and we will sift out the views of many. Give us their methods, their pet studies, the possibilities of exchange of material, or where possible send in gifts of micro-material. We should be glad to hear of any one who has material in the following subjects *true to name,* etc.: micro-fungi, Myxomycetes, deep sea gatherings, parasites of birds, fleas of animals, marine algae, diptera, eggs of insects, and any other branches. Journals and books in scientific lines for exchange, sale or donation will be helpful.

Original notes will be appreciated for our pages in terse paragraphs and short papers. We call on our friends to help us to fill a want, for surely in the years that have elapsed since the journals of microscopical sciences have not been published a good many facts have been hidden away. Bring these out, renew your friendships, tell us of your good fortune in finding pretty objects, new facts, new methods of technique, new books and forgotton tricks.

## The Microscope.

It has often surprised me when showing "something under the microscope" at a soiree, to find how very large a proportion of the public have never looked down a 'scope worthy of the name, and to learn how very faint and feeble an idea they have of what they should see, and of the actual sizes of the objects presented to them.

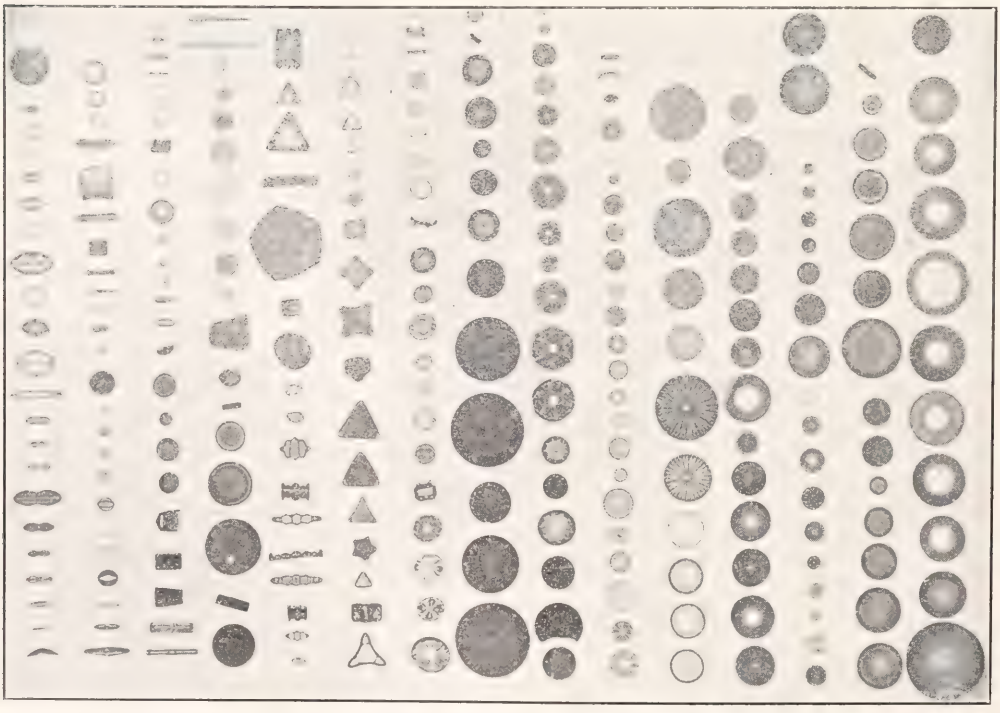
Great care should be taken of a microscope. Never put it away without dusting it, as Izaak Walton would probably say, "as if we loved it," and indeed we shall do so. No pursuit seems to exercise a greater charm over its votaries; no occupation makes its followers more careless of time or trouble; and this charm renders the microscopist a friend to his instrument, which is such a never failing ally, and his devotion will be manifest in the brightness of his brass, the clearness of his glass, the neatness and order of his arrangements, and above all in his readiness to impart to his less well-informed acquaintance the knowledge that he has acquired by his use of the most complete, the most charming, and the most ever accessible of the scientific instruments at our disposal.

## A Skeleton or Diatom.

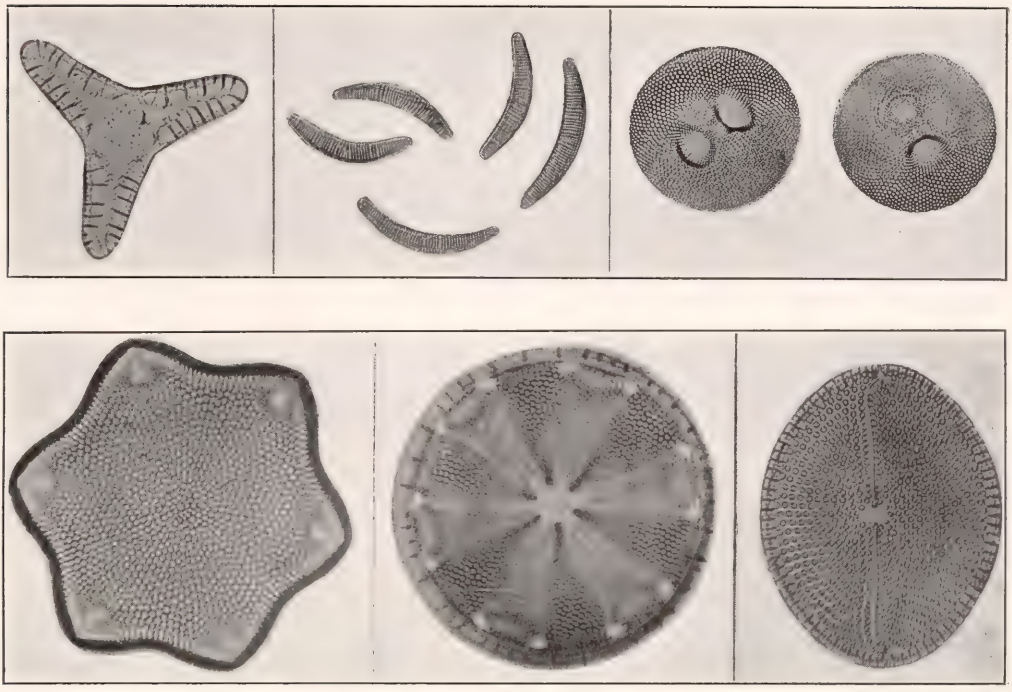
Here the snow is deep, the southwest wind is roaring around the house; there is nothing to see of the green pastures, and the young folks who have tired of outdoors say, "Uncle show us something under 'Mike' please." So I get my tube of science and select a slide, and I will ask my reader to join. Place your eye with mine over the eyepiece and look at one of Nature's marvels. Still use a lowest power eyepiece or ocular, which is the handiest and the truest in nine cases out of ten, put on a four-tenths or one-quarter inch objective, and place under it a slide given by Mr. T. Chalkley Palmer, labelled "Diatoms." If it were bright sunshine we would need no artificial help under the stage, but if the sky be at all leaden hue, we must insert a "spot lens" of wide angle. This will not merely provide a good black ground with low powers but will, when using the one-quarter or one-eighth inch, act as a condenser and give not only a well lit field but also oblique light for resolution of test objects, with a little

practice, which is necessary in this department of science as in any other. A little clever adjustment will illuminate our field of view admirably. There it is, and perhaps not one fellow in a hundred, not a microscopist, would be likely to guess correctly its origin. A disc, sculptured and fretted with wonderful work, with ornamentation more elaborate and more beautiful than that of any rose window in the cathedrals of the Continent. What is it, and what is its real size?

Well, it is the flinty skeleton of a minute water plant, and as the tiny atom is practically indestructible, this very individual may possibly have tenanted the earth about the time of Abraham. Who shall say? It may be in existence another four thousand years for any mutability which is in itself. As for its size, we measure and learn its diameter is one-sixtieth of an inch, so that some sixty of them can be easily ranged in that space with an interval between each. Who would deny it is His handiwork Who not only made the heavens but moulds a dewdrop? Yet an onlooker exclaimed, "What a waste of beautiful work, for the chances must have been a million to one that no one ever saw it!" Without doubt they were not made primarily for the delectation of our eyesight. Each line of silex, that surface, has its function and plays its part in the life economy of the plant, no student of nature will hesitate to affirm; but what that part is, how it is performed is a mystery, perhaps forever, even from such inquisitive and eager eyes as yours and mine. We examine one form, but they are legion! Amongst other genera are some called *Navicula*-boat-shaped diatoms; *Arachnoidiscus*-spider webbed; *Coscinodiscus*-circular shaped; *Pleurosigma*-resembling the letter S of slight and varying degrees of curvature. This last type has many species, varying in number and thickness of the markings or striae; and very largely used as "test objects" to estimate the quality of your objectives and eyepieces, your skill in handling your condenser, and machine as well as the illumination. Of their suitability I cannot chat or I would never go to bed to-night. Where doctors disagree, who shall decide? The great "fans" of the micro-world differ as the poles from the antipodes, so you and



A TYPE SLIDE TO SHOW VARIETY OF FORMS AND PATTERNS OF DIATOMS.
All this group occupied a space on the slide of not much more than the head of a pin.



PHOTOMICROGRAPHS OF A FEW DIATOMS TO SHOW VARIED PATTERNS.

I will merely look at the "dots" on *Pleurosigma angulatum*, one-fifty-two-thousandth of an inch apart, and verify the statement if our machinery and skill will do so. Anyway, we wonder at "the infinitely little," as shown in this small specimen of our cabinet. Do not be envious for you can find diatoms in ground, salty or fresh water areas, in every pool, in polishing powders like Electro-Silicon and Sozodont, on the piers, pilings, on the seaweeds, in the water at the bottom of the oyster cans, in fishes' stomachs, from the Arctic to the Antarctic, from the southern Pole to the Pacific, from Richmond, Virginia, to Monterey, California, from Cuxhaven, Germany, to Sweden and back to New York. You can make a single object slide, a strewn specimen, write your name, print a star, or place in alignment and photograph their names under or mix in the scales of moths or butterflies in mosaic patterns. Don't sneer—bigger folks than we have spent years to learn them. Remember Möller, Thum, Rinnbock, H. L. Smith, A. Schmidt, W. Smith, Van Heurck, J. Tempere, Kitton, Mills, Brun and Tempere, Bailey, Castracane, Cleve, Edwards, Gregory, Witt, Wolle, Boyer, found diatoms their master.

### Names of Friends Wanted.

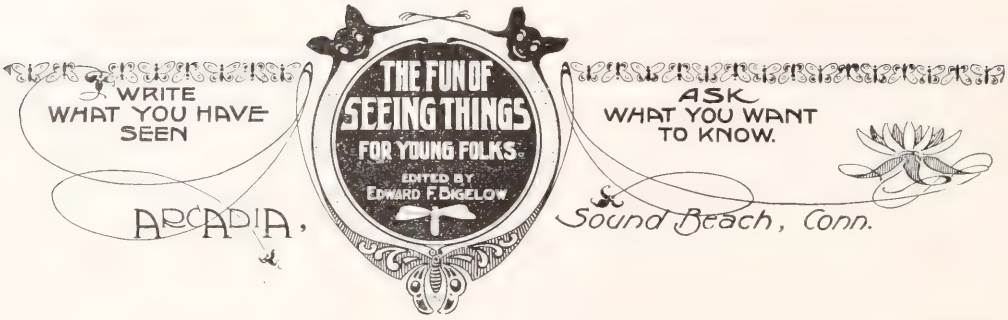
"The Scientists' and Naturalists' Directory," 1914, has just been issued by S. E. Cassino, Salem, Massachusetts. This is some help but we miss a good many names of old friends and some new ones. Send us names of friends who are interested in microscopical study and any of the allied branches. Let us plan for the opening of spring and see where volvox can be found—fresh-water shrimps, brine shrimps, polyzoa, fresh-water algae!

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The "British Medical Journal" notes that as the result of the age-long high cultivation of the soil of Belgium and northern France, wound infections from the earth of this region are different and more dangerous than those encountered in previous wars.

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A garden is a beautiful book. Every flower and every leaf is a letter. You have only to learn them . . . You do not know what beautiful thoughts grow out of the ground and seem to talk to a man.—Phil Robinson.




## Grandma's Toad.

Salem, Oregon.

To the Editor:—

Oh, yes, I know he is ugly, and that the boys say he will make warts on your hands if you touch him, but Grandma calls him her garden pet.

She says he keeps the garden free from slugs and other things that do harm. See how his sides pouch out. Grandma says that he has just finished eating a dozen or more slugs for his early breakfast.

She says that many ugly things in the world are more useful than the pretty ones, and I believe it. Don't you?

JEANETTE SYKES.

Nothing at ARCADIA has attracted more attention than the hatching last spring of innumerable toads. In Nymphalia we dug a small pond in the form of a Swiss cross in which the white lily, the emblem of the The Agassiz Association, is to be grown. This cross was filled with water. To it came a great number of toads. The water was filled with toads' eggs and when the little toads hatched, it was a seething mass of tiny tadpoles. In a short time the tails became shorter and the legs began to appear. Then the cross and the ground in the vicinity were full of the little hoppers that some young people said looked like jumping flies. As one viewed the cross the swarm of jumpers did resemble a swarm of flies, but in their actions were like grasshoppers. It would be a conservative estimate to place the number at least six thousand toads.



"GRANDMA'S TOAD."

The best general account of the toad is to be found in "The Frog Book" by Mary C. Dickerson, published by Doubleday, Page & Company. From that book we quote as follows:

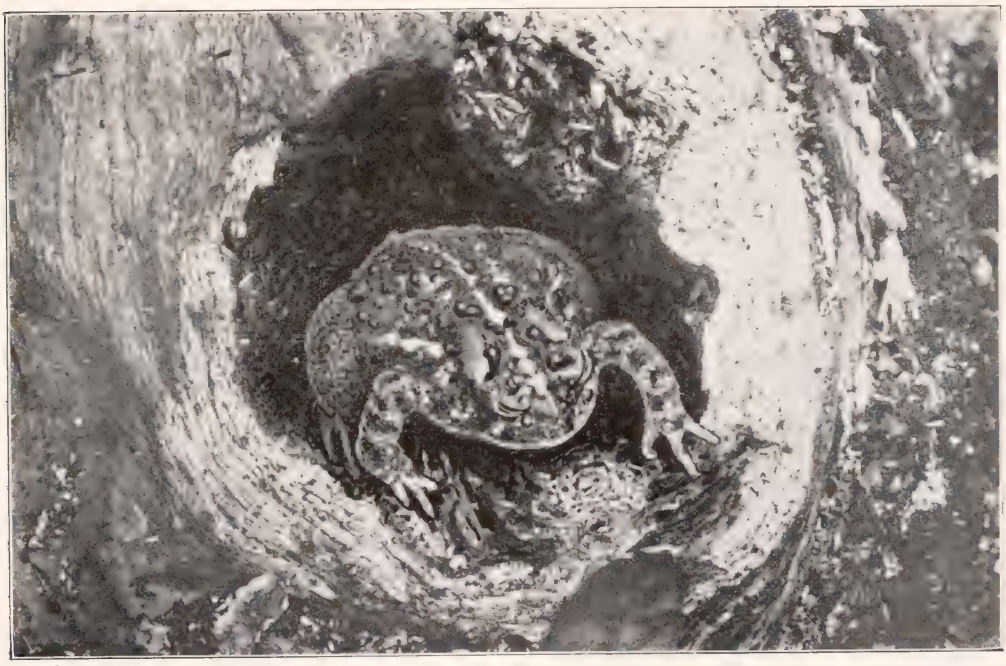
"For some time before the completion of the metamorphosis, the tadpoles prefer to be wholly or partially out of water. This fact shows that lungs have quite taken the place of the internal gills, and that our little water animals have been converted into land animals. If confined in deep water, tadpoles constantly rush frantically to the top to exchange a bubble of foul air for one of fresh, and they will finally drown if not given opportunity to stay above water.

"Just as soon as they lose the tails, toads are likely to leave the pond—a whole army of atoms of life, so small and so like the ground that if their numbers were few we should scarcely see one of them, or if we did, might think the little hopping thing merely a cricket. But sometimes the day of their final transformation coincides with the day of a gentle rain. A happy coincidence it seems for them, but it is likely to prove rather tragic instead. They cover the sidewalks and the roadways; and before each individual of the migrating multitude finds a sheltered corner he can call home, many hundreds have lost their lives under the wheels of carriages and the feet of hurrying pedestrians. The same apparent "deluge" of toads may come if a warm rain occurs shortly after the time of their change to land animals. They are so delicate at first, so used to life in the water, that they travel only when the air is moist. This means that they will leave their native

pond at night, and that until they are less sensitive must remain secreted during the daytime under stones and chips, in the cracks of board-walks or under the protecting cover of leaves and grasses. But let a rainfall come before they are too widely scattered or their ranks too greatly thinned, and truly it seems as if the toads must have rained down. For the great warm drops splash down on the boards, and see, there are baby toads just where the raindrops struck.

"The wet margin of river and pond in early July may be alive with baby toads. When the toads have been out of water for a few days they are found farther back in the grass. They congregate in large numbers on sunny brown earth patches. These they match so well in colour, that, as we approach, their simultaneous hopping into the shelter of the grass gives the illusion that the whole patch of earth is moving.

be the fate of these defenseless creatures. We try to get ten of them all at once into our closed hand. It is no easy task although there is plenty of room. As fast as one little fellow goes in, another hops out on the other side. But while they hop out of our hands, they themselves hop, without fail, into our hearts. The midgets have such bright eyes, wise expressions, and alert ways, and their legs seem so inadequately small, even for such tiny bodies. We know that if they proceed along sidewalks and roadways, unavoidable danger comes crashing down upon them, and that if they hunt the mosquitoes and other small insects of the fields and meadows, they must meet enemies unnumbered. Among these are snakes, crows, and several hawks and owls, besides ducks and hens. These are enemies not only of young toads, but of the full-grown ones also. The full-grown toads do not eat the young ones. In



A TOAD HOME IN A HOLLOW TREE.

"Those that have been out of the water for two or three weeks differ greatly in general appearance from the tiny black things with fragile legs that we see on the wet mud nearer the water. They are one-half inch long, very fat-bodied and show spots of bright red-brown. In six weeks they may measure one inch in length and are correspondingly fat. They may be light orange-brown in general colour with bright orange on the two large warts behind the eyes and on the under sides of hands and feet. When they are handled they play dead for seconds at a time and finally 'come to life' sticking up their little orange paws in most ridiculous fashion before they tumble over and hop away.

"We cannot see the army of toads as it leaves the water without wondering what will

this they are very different from most of their relatives. For the young toad, the most to be feared among these enemies is perhaps the hungry baby snake, who finds him a most palatable morsel. Probably many of the small toads succumb also to severe cold or rapid changes of temperature during the winter."

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### Yes, Spring is Coming.

It is whispered through all the aisles of the forest that another spring is approaching. The wood mouse listens at the mouth of his burrow, and the chickadee passes the news along.—Thoreau.

### The Fun of Seeing Things.

This department is designed especially for boys and girls, but parents, teachers and other adults will find in it much of interest. Our boys and

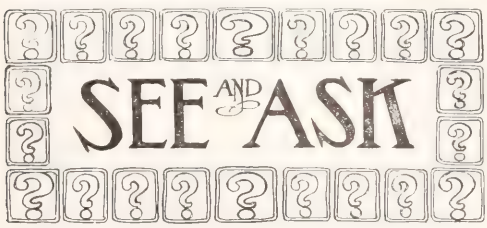



girls will read with pleasure and profit the rest of the magazine. The young folks are cordially invited to use their eyes and to think about their observations. If what you see is clear to you and you have taken pleasure in seeing it, tell others about it.

But suppose you find something that you do not understand; you do not know its name, nor whether it has a name; then is the time for questions. Any one that knows will gladly tell those who do not know. I am acquainted with some big bodied, good hearted, skillful naturalists and scientists that would willingly postpone a dinner or even go without for the pleasure of explaining something to an inquiring boy or girl.

There are plenty of people to help you if you really desire to know.

Answers by mail will be made to every inquiry pertaining to natural science, when accompanied by stamped and self-addressed envelope. We will publish so far as we have room




letters and answers on topics that are of general interest and have not previously been explained in this magazine. There is fun in discovering things and in pointing out the way to some other learner.

There is almost as much fun in asking and in learning about something that interests you.

We are planning to devote considerable space to this department of THE GUIDE TO NATURE, and cordially invite the cooperation of teachers and parents.

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### Children's Perpetual "Why."

From the time children reach the age when they can talk, till the time arrives for them to be sent to school, their home and outdoor life, as expressed in conversation is a perpetual "Why?" They seek to know the reason for everything and from the grass at their feet to the glorious sun above them, in all things which grow and have any being—in all the phenomena of nature, their curiosity is being constantly aroused. They earnestly seek for information as to the why and wherefore of all creation. At no period of their lives are they more earnest in their efforts at observation and, as their experience gradually leads to knowledge, their awakening ability to notice differences and resemblances becomes an agent of marked power in developing their intellectual life.—"The Catholic Educational Review."

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### Why Not More in Education.

The Greenwich Bird Protective Society in a recent circular announcing a lecture by Niel Morrow Ladd, President of the Association, uses this remarkable expression: "The good influence the study of nature has upon the mind of the child."

That expression represents the opinion of most teachers and parents. In fact every one recognizes that nature study is good for the child. And we should not forget that it is even better for the adult because the adult can better understand nature. It is not possible for any one person to learn all there is to be learned of nature. Although he may begin in childhood the life of even the oldest person is not long enough for him to learn more than a fraction of what is to be learned in this wonderful world. It is therefore well to begin early.

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We linger in manhood to tell the dreams of our childhood, and they are half forgotten ere we acquire the faculty of expressing them.—Thoreau.

# THE AGASSIZ ASSOCIATION

Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

## ARCADIA: Sound Beach, Conn.

BOARD OF TRUSTEES.

Corporators: Edward F. Bigelow, Ph. D., Sound Beach, Conn., President and Treasurer; Hon. Homer S. Cummings, Stamford, Conn., Secretary; Walter D. Daskam, Stamford, Conn. Other Trustees: Harlan H. Ballard, Pittsfield. Mass., Honorary Vice-President; Hiram E. Deats, Flemington, New Jersey, Business Adviser and Auditor; President David Starr Jordan, Stanford University, California, Dean of Council; Dr. Leland O. Howard, Washington, D C., Naturalist Adviser; Reverend Charles Morris Addison, Stamford, Conn.; George Sherrill, M. D., Stamford, Conn.

From the Charter of Incorporation: "The purposes for which said corporation is formed are the following, to-wit: the promotion of scientific education; the advancement of science; the collection in museums of natural and scientific specimens; the employment of observers and teachers in the different departments of science, and the general diffusion of knowledge."

### "Should be Placed on a Permanent Basis."

The work of The Agassiz Association is of vast importance to science, but if it were not dependent upon voluntary labor, its efficiency would be even greater than it is. It has already reached a period when provision should begin to be made for placing its work upon the more permanent basis of funded property and paid labor. That it is worthy of the support already received from its thousands of members cannot be questioned, and this is a sufficient guarantee that it would be a proper and useful trustee and administrator of a part of the large sums annually distributed by public-spirited persons to institutions having not a tithe of its claims to their favorable consideration.

I should also take the liberty of saying that material returns should not be wanting, in order to secure the enjoyment of something more than the personal satisfaction of having done good work, and that the Association should be placed on a permanent basis, and its work secured, now and in the future, by means of large invested funds. —Alpheus Hyatt in the Introduction to "Three Kingdoms."

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Scientific "specialization" has become such an educational mania that the old-fashioned "all-round" naturalists now are few and lonesome. At the same time, however, the need for the dissemination of practical every-day knowledge regarding our mammals, birds, reptiles, and fishes never was so great as now.—William T. Hornaday, in "The American Natural History."

**Please remember this educational uplifting work in making your will.**

### Form of Bequest to the Association

*I hereby give and bequeath to The Agassiz Association, an incorporated association, having its principal executive office at* ARCADIA, *in Sound Beach, in the town of Greenwich, Connecticut, the sum of ----------dollars.*

**Forty Years Past; Forever in Future.**

The Agassiz Association was organized forty years ago on the grandest principle that ever associated boys and girls, men and women. It regards every individual as supreme, and has as common subject the Universe and its Maker. "Per naturam ad Deum" is its motto to-day as it has been for



MR. HARLAN H. BALLARD, PITTSFIELD, MASSACHUSETTS.
He established The Agassiz Association forty years ago.

four decades. The university, not the kindergarten, has always been the point of view. No one lines up a class and says, "Here is the game; I will show you how to play it;" No one tells you what clothes you shall wear, nor what thoughts you shall think. The youngest child is as free to see and to tell as is the eldest member of the Association, or the veteran technical scientist in his learned monograph, whose joy of seeing and telling in his way is no greater for him than is that of the beginner. In fact the veteran realizes better than the novice that he is only a beginner, that there is yet before him much for him to learn.

The Agassiz Association expresses itself in terms of peace, civilization, equality, and dignified self-respect. It regards no one as a "tough" and treats no one as needing reformation. It assumes that human nature is not bad but good. It exalts no one on account of his wealth, knowledge or station. The greatest thing to do is faithfully to serve others. There is no exaltation of office. No chiefs have charge of inferiors. Every one is a chief when he unselfishly gives of the greatest thing in the world, his ability "to see and to tell," for the benefit of others, not to confer a favor in the seeing and the telling, but for the PRIVILEGE of doing it.

The Agassiz Association regards every member as innately kind. The Agassiz Association embodies the law of love, not the love of law. Its kindness to man begins when he is a boy. To have him to love a horse, is better than to punish him in court for having pounded a horse.

The Agassiz Association requires no course of study because every member is a teacher. Even the youngest member goes directly to Nature's storehouse of knowledge, and helps himself to his own joy, telling some one else for additional joy. The child as well as the man can play in the ocean's edge, and each shall be the teacher of the other, and the joy of each shall inspire the other.

No one outgrows The Agassiz Association. In old age it is not remembered as a thing for boys or girls, but the enthusiasm of youth grows stronger with age. As Dr. Van Dyke has truly said:

Let me but live my life from year to year,
With forward face and unreluctant soul,
Not hastening to nor turning from the goal;
Not mourning for the things that disappear
In the dim past, nor holding back in fear
From what the future veils, but with a whole
And happy heart, that pays its toll
To Youth and Age, and travels on with cheer.

So let the way wind up the hill or down,
Through rough or smooth, the journey will be joy:
Still seeking what I sought when but a boy,
New friendship, high adventure, and a crown.
I shall grow old, but never lose life's zest,
Because the road's last turn will be the best.

The Agassiz Association means mutual helpfulness. An individual member and an organized Chapter of mem-

bers are free to do things in their own way—be it much or little. Take the things at hand and investigate in your own way. Long ago, long before the reader came into existence, the Reverend J. G. Wood said: "So richly does nature teem with beauty and living marvels, that even within the closest dungeon walls a never failing treasury of science may be found. . . . The annals of an obscure village in Hampshire have long risen into a standard work, merely by virtue of the close and trustworthy observations made by a resident in the place; . . . . and many most curious and valuable original observations now committed to my note-book, were made by an old lady in her daily perambulation of a little scrap of a back yard in the suburbs of London, barely twelve yards long by four wide. . . . There is not a mote that dances in the sunbeam, not a particle of dust that we tread heedlessly below our feet, that does not contain within its form mines of knowledge as yet unworked."

Any Chapter may participate in a public parade behind a band of music, may wear broadcloth or calico, may sing songs around a bonfire, hold a fair, or publicly act a Shakespearean play. It all depends on local circumstances and individual preferences. Some of our Chapters find it profitable to do some or all of these things, but there are no such requirements, no such code of instructions issued from the Home Office. Every member and every Chapter is as unrestricted in social matters as in methods of observation.

When members of The Agassiz Association go to walk, they are not sharp eyed with one eye and blind in the other. "Everything is 'fish' that comes to the net of a naturalist." A bird is indeed of interest but so is the tree through which it flies or where it sings its song.

The Agassiz Association seeks to develop mind and heart. It appeals



IN THE WELCOME RECEPTION ROOM.

The present President receiving a new Chapter (the Putnam Chapter of Greenwich) into the forty years young Association.

Holding the leaves of the Agassiz Yucca, and standing under the light of the Swiss Cross, the officers and members of the Chapter repeat together as they receive the Charter: "May we be inspired by the life of Louis Agassiz to enthusiastically study nature."

to the thoughtful rather than to the thoughtless.

It has never been in the glare of great public popularity. The Agassiz Association considers it more important to observe than to be observed.

The Association, while the oldest and largest organization devoted to outdoor interest, has been outdistanced by some of its own Chapters, which have popularized some particular phases of science. It has also seen the rise and fall of many fads and fashions, but it will continue for all time as it has continued for forty years to meet the needs of thoughtful, dignified, self-respecting, reverent students and lovers of Nature. No other outdoor organization has assembled Youth and Age together on equal terms, no other natural science organization so keeps the enthusiasm of youth in age. Agassiz was a "big boy," and a learned technical scientist. One of his young pupils, now chancellor of a great university, David Starr Jordan, a Trustee of The Agassiz Association, was so influenced by Agassiz that he retains the comradeship of youth. Dr. Jordan says of Agassiz: "He was the past master of enthusiasms."

In the light of to-day's science, Agassiz may have made some mistakes, and so will you, not only the least experienced, but even the most learned yet never will any make a mistake in keeping the spirit of Agassiz in a search for the truth.

The Agassiz Association has never had extended financial aid because it is neither patronizing nor pathetic. Only rare personalities give to those who do not assume an attitude of inferiority. Josephine Dodge Daskman has truly said in one of her Fables, "Nothing succeeds like distress." It takes a noble soul to give to equals in the spirit of dignified recognition of equality with no expectation of return other than the joy of doing.

Individual liberty, the modern thought in education, was insisted upon by The Agassiz Association forty years ago, and it was put into practice according to the spirit of Louis Agassiz, who used that method in his teaching, when he told a pupil in words now classic:—"study the fish." Then he left the pupil to study in his own way. It was sufficient for Agassiz to point the way to the fish, and then let the pupil work out his own problems, and to assist only when assistance was really needed. The Agassiz Association does not annihilate the joy of original discovery.

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## Our Visit to ArcAdiA.

On Monday, January 11, 1915, our recently organized Putnam Chapter of The Agassiz Association in the Greenwich Academy visited ArcAdiA at Sound Beach. We were met at the door of the Welcome Reception Room by Dr. Bigelow, President of The Agassiz Association. As we entered the room, we saw at the left of us a bright fire burning in a large fireplace. At the right were different forms of apparatus placed on a platform. We went on through the room and removed our hats and coats in a small adjoining room. Then we all came back and sat down before the fire with a class from the High School which was also there. Dr. Bigelow then told us all about The Agassiz Association and how it was founded. After that he showed us some lantern slides of ArcAdiA, from the time it was established until now, and explained its emblems and work. We were then initiated and the Charter was given us. All the officers held on to the leaves of a plant, The Agassiz Yucca, brought by Louis Agassiz himself from South America. The rest of the Members of the newly formed Putnam Chapter were grouped about Dr. Bigelow who stood presenting the Charter, on the other side of the table on which the plant was set. A flash light picture was taken of us in this position.

Afterward Dr. Bigelow took us around ArcAdiA. It was very picturesque in some parts. Then he took us through the different buildings. He showed us trout eggs, buds, twigs, stuffed birds, shells, etc. We were then shown some microscopical projection of buds, snails' tongues, parts of plants, insects, etc. After that we said good-by and went home.

Dorothy Thorp, President.

Constance Taylor, Secretary

**Here is the Right Kind.**

Mr. Alfred Cookman of Moneta, California, is a hustling active member, a good missionary in interesting others. Previous to his becoming president of our Luther Burbank Chapter in the University of Southern California, Los Angeles, he established the West Point Club of Long Beach, which now has an enrollment of forty-five boys. This club is to become a Junior Chapter of The Agassiz Association, under the charge of Mr. Fuller, one of the young men developed in nature interests under the influences of the AA. Of the changes in the Luther Burbank Chapter Mr. Cookman reports as follows:

"I am now business manager of the Luther Burbank Chapter. Miss Lena Kirkpatrick is our new president. Professor Benton is Honorary President. Next summer, I am planning to teach ornithology at Forest Home in the San Gabriel Mountains. This outline course in bird study will be given under the auspices of the AA. Last summer, Dr. Miller taught the class and there were nearly a hundred women and men in attendance."

Mr. Cookman and Mr. Fuller are making earnest efforts to broaden the scope of some bird students so that they will study all nature in the AA spirit. They recently escorted several friends to an investigation of the 'willow bottom' of the Los Angeles river, nineteen miles south of Los Angeles. Mr. Cookman sends these interesting notes of the excursion:

"Two weeks previous, the writer addressed the Los Angeles Audubon Society in the parlor of the Hotel Clark in Los Angeles at their regular meeting on the subject, 'Observation of Bird Life in the Dominguez Slough.' The area embraced by the willow bottom was included in this lecture for it is a part of the Dominguez Slough. The object of my lecture was to present a list of the birds that inhabit this locality from personal observations made during the two years that I have been carrying on an ornithological survey in the San Pedro Harbor territory. The Slough and the willow bottom form the north boundary of this territory. I also wished to prepare the members for the field trip by submitting my plans for bird study and to bring them pictures of the locality we were to visit.



MR. COOKMAN AND MR. FULLER AND A PART OF THE PICTURESQUE PLACE TO WHICH THEY GUIDED A COMPANY OF NATURE STUDENTS AND HELPED THEM EXPLORE.

The Long Beach flyer soon conveyed us to the desired locality. We arrived at Cerritos Station and were met with a surprise. The station is one mile south of the willow bottom. A large flock of yellow-headed blackbirds—we estimate two thousand individual birds—flew down almost at our feet and were welcomed with a cry of delight from all of us. The blond tourists are migrating through this locality. We watched them soar hither and thither for nearly an hour.

Several species were added to our list as we approached the willow bottom. The Los Angeles River rises in the tall snow-capped San Gabriel

mountains and flows gently in the south, southwesterly direction to the Pacific Ocean, to the Harbor of San Pedro.

The river flowing gently in this district of Los Angeles County is bordered on both sides with willow and cottonwood trees. They have grown up so dense that one finds it difficult to go among them. Thousands of beautiful birds congregate here every month of the year. They come in flocks to feed on crustacea, mollusca and marsh insects. They bathe in the cool water and flutter merrily among the green foliage of the trees.

As we entered this region going among the trees, we listened for the call notes of the marsh birds and the roundelays of the smaller species. The large spiders and various insect life were noted with intense interest. The clear, call-notes of the spurred towhee and the sweet trill of the song sparrow stirred our hearts with nature's biological enthusiasm so that our endeavor to gain knowledge from this realm was a source of delight and happiness. We watched the birds hunting for insects among the green foliage. They hopped from twig to twig, from blossom to blossom picking morsels here and there, and were apparently enjoying life to the full. If I had one of those pretty birds in my hand, a mere pressure of my thumb and middle finger would silence the song and still the life of the bird forever. But what right would I have to take the life of a bird? If any creature may claim exemption from harm and untimely death surely a bird may claim it. They were joined in a moment by others beautiful in plumage and sweet in song.

The entire day was spent among the trees of this locality. All observations were recorded in notebooks, and when the sun began to sink behind the western horizon, the San Pedro hill and the shadows of night were creeping over the land, we bade farewell to the avifauna of this region and journeyed home, having enjoyed a day long to be remembered.

---

What are threescore years and ten hurriedly and coarsely lived to moments of divine leisure in which your life is coincident with the life of the universe —Thoreau.

### From the Country Life Chapter, Middletown, Connecticut.

Last year, because of the crowded condition of our school, we were unable to hold regular meetings and consequently they lacked the former enthusiasm. During the year we held one outdoor and two indoor meetings. The outing took the form of a tramp to Mount Higby on which a very enjoyable and instructive time was had. The first meeting was held for the purpose of electing officers, and the second was a regular business meeting. The number of members for the year was ten.

This year we have much better conditions to work under and look forward to an enjoyable and instructive year. The first meeting was held on November 19, at which the following officers were elected: Kenneth Noble, President; Miss Gladys Lorenz, Vice-President and Ralph Frissell, Sec. and Treas.

Yours very truly,

RALPH A. FRISSELL, Secretary.

---

### Illustrating Protective Colorations.

The latest of Mr. Abbott H. Thayer's models to illustrate his well-known theory of protective coloration is the figure of a tiger. The animal, modeled in the round and colored as in life, stands amidst long grass and against a background of taller stems, which also are colored as in nature.

The lighting is by two sets of lamps, one from above as if the creature were out of doors, the other from below in the most unnatural manner possible.

When the lighting is from beneath, the tiger stands out against its background, black and hard and unmistakable. But when the other illumination is switched on, the beast immediately vanishes. Even after the eye has at last picked up the outline, the figure still appears flat, transparent, and unreal, not at all like a round object. As with virtually all wild creatures, the darker back, lighter sides, and still lighter under parts, when illumined from above, just offset the higher lights of the upper parts and the shadows underneath, and take away the appearance of solidity.

The model, which is the first that the artist has made for public exhibition, will be the property of Clark University.

# The Guide to Nature



1915

APRIL

VOL. VII. No. 11

EDWARD F. BIGELOW

MANAGING EDITOR

Published Monthly by

THE AGASSIZ ASSOCIATION

ARCADIA, SOUND BEACH, CONN.

Subscription, $1.00 a Year; Single Copy, 10c

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**For Pupils:**

## "Has Solved the Problem of Nature Study"

The Chapter of The Agassiz Association has without doubt proven its worth. It has solved the problem of nature study in a highly satisfactory manner. I would advise every high school to establish a Chapter. W. J. Prouty, Principal High School, Meriden, Connecticut.

**Personal:**

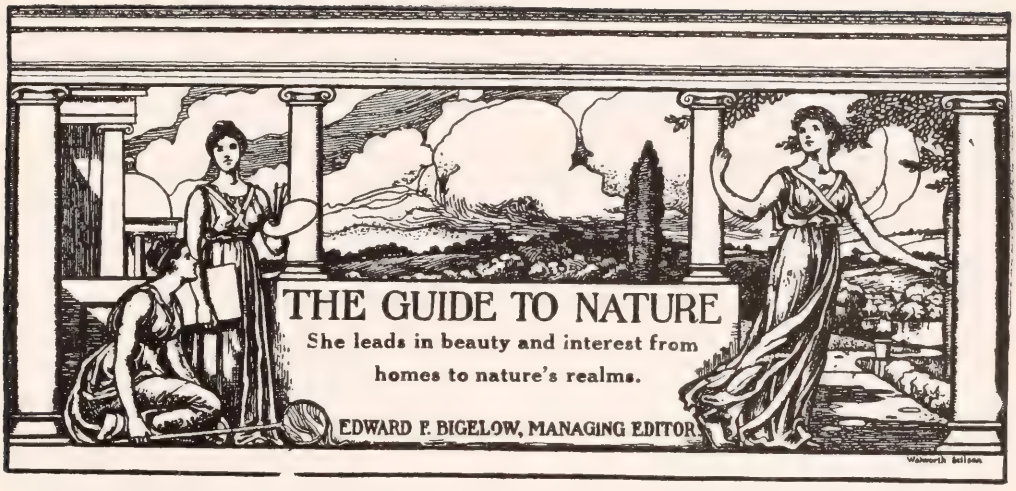
## The Right Method in the Pedagogy of Nature Study

I wish to commend your plan for the teaching of Nature Study. It is the only feasible plan I have ever heard presented for the use of the great body of teachers. You make the thing so simple that any teacher can succeed. I regard this message as very valuable, and I trust you will carry the message to many teachers. L. Mayne Jones, Superintendent Schools of Jefferson County, Brookville, Pennsylvania, to Dr. Edward F. Bigelow after a week as Instructor of all the teachers in this county.



MRS. RUSSELL SAGE

Illustration by courtesy of the National Association of Audubon Societies.




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut,
Subscription, $1.00 a year Single copy, 10 cents
Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII **APRIL.** Number 11

## Interested in Wild Birds and Animals.

Mrs. Russell Sage is taking a commendable active interest both financially and personally in various forms of outdoor life and nature study. "Bird-Lore" in a recent number of that magazine mentions her various gifts in behalf of bird protection and adds the following, which we are sure will be of especial interest to our readers:

"Mrs. Russell Sage is greatly interested in everything that makes for the up-building of the human race; and among her wide range of benefactions has not neglected the wild birds and animals, which she often enjoys in her walks afield within Central Park, where she is on intimate terms with the squirrels, or at her country place, where no doubt the birds know her as well as she knows them."

Through the courtesy of that magazine and of the Audubon Societies, we present to our readers the beautiful full page illustration showing Mrs. Sage on friendly terms with a wild gray squirrel that she is feeding in a grove in Central Park. This picture will bear careful study as a photograph and as a picture of an interesting incident in the life of a wild animal. It is valuable not only because it is picturesque, but because it preaches a sermon in nature study more effective than words.

## Growing Tomatoes on Trellises.

The public schools of Bloomington, Illinois, in their school gardening are devoting special attention to tomatoes. For several years three thousand Grand Pacific tomato plants have been distributed annually among school children, giving to each a single plant or at most only two. The children were to set the plants in their home gardens, cultivate them, care for them in every way, and in September bring the finest of the fruit for tomato exhibits at the different ward schools. Prizes were awarded for the finest specimens. Last year fifteen thousand tomato plants were distributed with the following instructions

### How to Grow Grand Pacific Tomatoes.

Select a spot of ground with full exposure to the sun. When the soil will crumble nicely, spade the ground the full depth of the spading fork.

After the ground has been carefully prepared set the posts or stakes for the trellis making it from six to eight feet high.

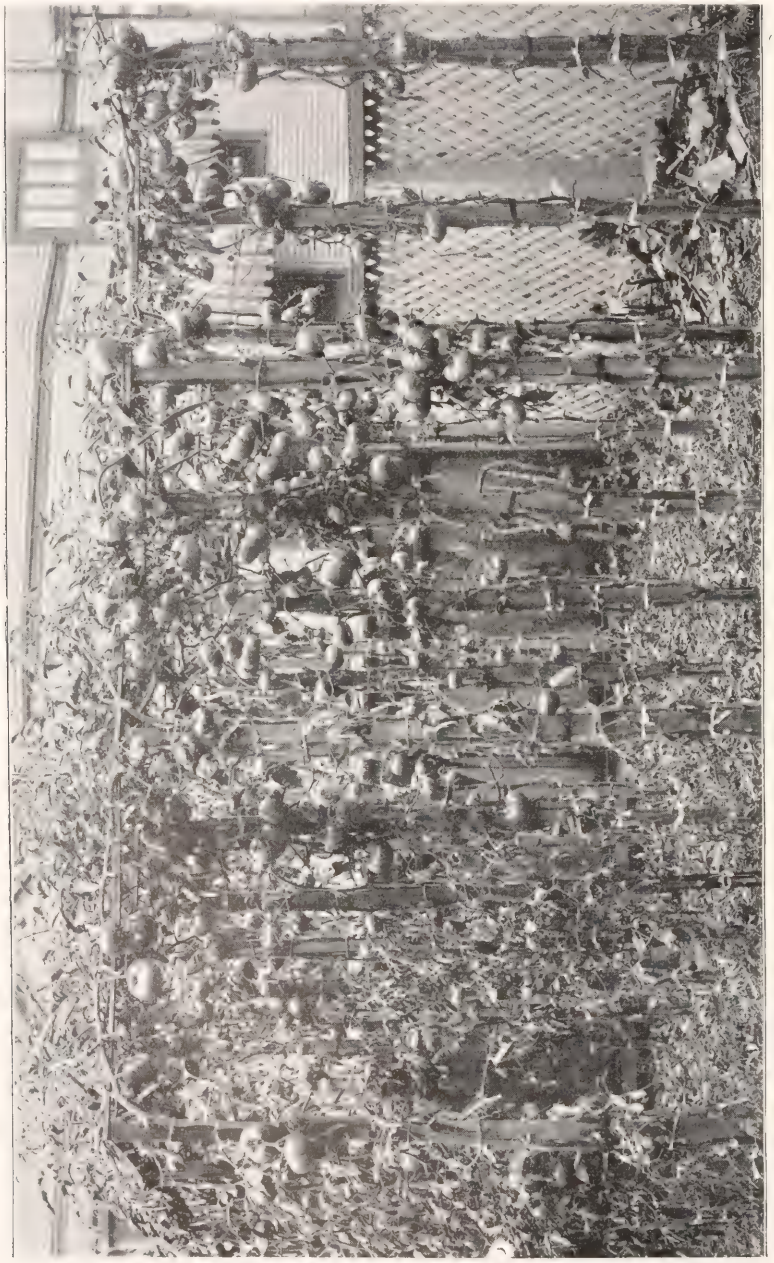
If the plants are to be set along a fence or building they can be fastened to the fence or building in place of a trellis by using strips of cloth around the vines and tacking the cloth to the wall or fence.

Set the plants one foot apart in a row along the trellis, fence, or wall. As they grow, trim them to single stems or not more than two stems. Continue the trimming throughout the whole season. Close trimming turns the sap of the plants to the fruit clusters and produces fine clusters of fine large tomatoes.

Copyright 1915 by The Agassiz Association, ARCADIA: Sound Beach, Conn.

Keep the ground well cultivated. After every shower stir the surface soil with a rake so as to keep the surface covered with finely broken up soil.

Should the summer be dry, once a week thoroughly saturate the ground about the tomatoes with soap-suds or water and a day later rake it. The cut at the head of this letter shows the possibilities with this variety of tomatoes. J. K. STABLETON.



HOW THE YOUNG FOLKS SET A GOOD EXAMPLE FOR THIS SEASON IN GROWING TOMATOES.

Following this method the pupils achieved astonishing success. Through the courtesy of the "Nature-Study Review" we present an illustration of one of these successful efforts.

### The Germans Spare the Trees.

It is said that the German invaders of Belgium, whatever else they may have destroyed, have been careful not to injure park trees. The cavalrymen, so a report goes, are forbidden to tie their horses to trees for fear that the animals will gnaw the bark. Germany was the first nation to apply forestry on a large scale, some of the crown forests having been under scientific management for over a hundred years.—"Nature-Study Review."

ly "purrs" when he dies, making the curious sound which the watcher by a death bed recognizes as the death rattle."

Each of these three sounds is produced in the same way, namely, by the breath being gently forced forward through a liquid film in the air passage, the liquid being thus blown into a quick succession of bursting bubbles, which make the "purring" noise—as motor cycles make a loud purring noise when the explosions of the petrol become rapidly successive. When a man tries to imitate a cat's "purr," he consciously accumulates a little liquid at the back of his throat and breathes outward through it. Try to "purr" yourself and you will realize that it is so. When he "gargles" he simply "purrs" vigorously through the doctor's stuff. When he dies quietly, his failing organs allow the air passage to become flooded with liquid, and his last breath is a series of bursting bubbles. So he "purrs" a good-bye to the world.

But it cannot be said that, as a general rule, man purrs when he is pleased, like a cat; and probably it is true that cats and cat-like animals stand alone in expressing **pleasure** by a series of bursting bubbles in the throat why is this?

To answer this question, let me ask another; what is the most glorious moment in the youthful experience of a wild cat, a tiger or a leopard, at the time when its most vivid and lasting impressions of life are being formed? It is the moment when it has for the first time seized for its prey some comparatively large creature—perhaps as large as or larger than itself. What happens then? We all know that when a sportsman in India wishes to shoot a tiger, he usually depends upon the news brought to him by the natives of a "kill." This means that the tiger has killed some large animal, such as a bullock, and left it. The sportsman knows that the tiger will return to eat part of the bullock during the night, and he makes his plans accordingly. But why did not the tiger eat as much of the bullock as it was likely to require at the time when it was killed? Because, when it had killed the bullock—us-

## Why and How a Cat Purrs.

No one knows positively how or why a cat purrs. The question has been extendedly discussed and a multitude of answers suggested.

Mr. E. Kay Robinson the editor of the "Country-Side Leaflet," our English twin nature periodical, has been amusing himself and the young folks by a curious attempt at an explanation. I do not know why he lives in England. His ingenuity would suggest that he is a "Connecticut Yankee." Perhaps he is tuning up to write a book of nature stories. Perhaps he is not scientifically serious, but just trying to be funny and to see funny things. According to his amusing theory, a kitten purring on the rug is dreaming she is killing an animal and drinking the blood!!! Here is his "story" (in more than one sense) but it is really worth reading:

WHY DOES A CAT "PURR"?

This is one of the ordinary "children's questions" which their seniors find so difficult to answer; and of course a complete and satisfactory answer to this question must tell us three things. It must explain (1) why the noise made by a cat (and a few other animals) is the peculiar sound which we imitate in describing it as a "purr"; (2) why the cat makes this noise, or any noise at all, seeing that solitary hunting animals are mostly silent except when they deliberately challenge their rivals or cry out through pain; and (3) why the cat only purrs when it is pleased.

The first question, why "cats"—meaning all kinds of cats, up to and including the leopard and the tiger—make the noise which we call a "purr," suggests that other animals do not make this noise; but there is at least one other animal, man, who may be observed to "purr" on three distinct occasions.

Firstly, a man sometimes "purrs" when he is consciously imitating the noise made by a cat, for his own, or his friends', or even his cat's entertainment. The great Cardinal Richelieu did this for the last reason, so the chroniclers tell us. Secondly, a man "purrs" when, acting under doctor's orders, he "gargles" medicine. Thirdly, he usual-

ually by a double blow with both forepaws, one paw striking heavily down on the neck just in front of the shoulders and the other striking violently upward under the chin (the combined effect of the two being to snap the brawny neck as easily as the stem of a clay-pipe)—when it had done this the tiger drove its fangs deep into the victim's throat, cutting through the blood-vessels and drinking thence the hot stream of blood that gushed violently out, as from a high-pressure tap turned on to the full. It is no exaggeration to say that while a tiger, or cheetah, or other large wild cat is thus engaged, its stomach can be seen to swell visibly in size; so copious is the draught of blood. Naturally, it does not proceed at once to eat part of the carcase. It is replete. But liquid blood is so easily digested that, before many hours have passed, it will be back again at the "kill," satisfying hunger more solidly and for a longer period.

And before it returns, while the sportsman may be viewing the "kill" and making arrangements for his midnight vigil, what is the tiger doing? Only "purring" probably. It began to "purr" as soon as it fixed its teeth in the bullock's throat, and it "purrs" again as it lies in its lair and dozes off its surfeit of fresh blood. In the first instance, no doubt, its "purr" was the natural result of circumstances. It could only breathe through a film of the blood that was gurgling down its throat. Even afterwards, as it lay at ease, it may have been so full of the blood that each breath was naturally drawn through bursting bubbles of it; and it needs no vivid imagination to understand how and why the "purr-purr" of the indrawn and out-blown breath became the highest expression of the great cat's content. And all cats are tigers in miniature. The rabbit is the bullock and the rat the goat of the common cat; and, though the domestic Pussy may seldom actually breathe through air-passages brimming with blood, the glorious suggestion of the hereditary sensation is there, when the breath comes slowly, "purr-purr," like the voice of the turtle-dove, through a liquid film at the back of the throat. I do not suppose for an instant that the cat is conscious of the reason why "purring" and pleasure go together. But watch any kitten when she is "purring" her loudest on the rug, as her claws go in and out of the yielding hairy surface as if squeezing the blood out of the victim's throat—there you have a complete picture of the instinct of the fierce wild tiger's life in your undeveloped "harmless necessary cat"; and the "purr" is its audible expression of the hunting fury of bygone ages.

For the reason why a cheetah, with its teeth fixed in the antelope's throat, purrs as the blood gushes down its throat, is not that it is consciously pleased or purrs "on purpose." It purrs because it cannot breathe otherwise. Try the experiment upon yourself, and see. Imagine yourself with a rich stream of blood flowing down your throat—not that you are merely drinking, but that the arteries of an animal as big as yourself are pumping their full force of blood down your throat while you are gripping the dying creature with your teeth and squeezing its throat with both hands. Imagine yourself in this tiger-like position, and then breathe. You will find that you must breathe through the upper part of the air passage only; and, though the stream of blood is imaginary only, you begin to purr. That is why the tiger purrs with its teeth buried in the bullock's neck, and his claws gripping the shivering carcass, and it is the inherited association of ideas which makes Pussy purr like a clockwork machine as she plunges her claws into the hearthrug and grips them out again.

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### A Tree Worth $60,000.

A single rubber tree in Bolivia supports a family of seven persons in comparative affluence. This lone tree has stood for generations, until it now measures about 27 feet in circumference at the base. The daily yield of caoutchouc is more than twenty-two pounds during the 120 days of the year that the tree can be successfully tapped, or almost a ton and a half of this precious product annually. On the basis of this yield the tree has an estimated value of $60,000.—Tree Talk.

### The Goat Is Encouraging.

Of all encouraging animals I think the goat will take first premium. We might as well expect a pig or an ox to climb a tree, yet the goat with his smooth hoofs can get out on the limb of a tree, as is evidenced by the accompanying photograph, kindly lent us by The New York Zoological Society.

The goat does almost incredible things. We read amazing stories of the goat and disbelieve them until along comes somebody and proves that they are true. I remember, when I was teaching nature to the boys at The MacKenzie School at Dobbs Ferry-on-Hudson, that one of the youngest pupils asked me this question, evidently trying to ascertain how extensive is my knowledge of goats: "Does a goat really eat the paper from billboards and old newspaper as is often shown in pictures?" Having never seen a goat eating paper, I made the reply that I feared the humorists had greatly exaggerated the goat's eating capacity. A goat now and then, may perhaps eat a small piece of paper, as a horse may eat a dried leaf.

That remark of mine made the youngsters' eyes glisten with delight. Up went a multitude of hands. Those boys were going to teach me, and they intended to do it promptly. One of them had a pet goat of which he was very fond and he had frequently exhibited that goat's ability to eat paper. I didn't know much, but they seemed fortunately to think that I might be taught. The pet was brought into the classroom, and in my presence, ate an entire New York Sunday newspaper.

Now along comes Mr. E. R. Sanborn, photographer to the New York Zoological Park, and demonstrates by the aid of his camera that a goat can climb a



THE GOAT THAT CLIMBS A TREE—HIMALAYAN TAHR.
This hardy and skillful mountaineer, in lieu of rocks to climb, ascends the great oak in his corral.
Photograph by courtesy of The New York Zoological Society.

tree. Having had these two impressive lessons in goatology, we now are prepared for almost any statement that may be made regarding goats. Who will give us our third lesson?

### Feeding the Wild Birds.

Among the naturalists who are doing thoroughly good work in stimulating an interest in the feeding of wild birds and in the study of birds in general, no one is doing better work than Mr. Ernest Harold Baynes, formerly of Stamford, Connecticut, and now of the Bird Sanctuary at Meriden, New Hampshire.

In "The Outlook" Mr. Baynes tells how he has established simple methods of feeding various wild birds. The gist of the matter is to put out plenty of suitable food in places convenient for the birds. Anybody will in this way win the birds' confidence as Mr. and Mrs. Baynes have done. The accompanying illustrations, kindly lent to us by "The Outlook," show the astonishing trust that the birds have in their host and hostess. The article is replete with interest. Naturalists will be glad to learn that Mr. Baynes is preparing a book soon to be issued by E. P. Dutton & Company, and entitled "Wild Bird Guests and How to Entertain Them."

There is everything in Mr. Baynes's methods to encourage even our youngest observers of nature. He puts out large pieces of suet for the insectivorous birds, tying it about a branch of a tree, brought well up in a convenient place for observation from his window, "Let us suppose," he says, "that we see such a tree, and that there is a well-exposed branch from eight to twelve feet from the ground. We fix the position of that branch in our mind, and, suet in hand, we go to the tree. Perhaps we can easily climb to the branch; if not, we get a ladder. We should have three or four pieces of soft string of convenient length, with one of which we tie the suet at just the place and in just the position in which we want it. It is well to have it either on top of the branch or on the side; if it is fastened underneath, certain birds that like suet would have trouble to reach it. If it is fastened on the side, it should be on the side where it can be seen from the house. The other pieces of string should be crisscrossed back and forth, and should bite into the suet a little at each turn, so as to leave all snug and tight. The object of having several strings is to



MRS. BAYNES ENTERTAINING PINE GROSBEAKS AND A CHICKADEE.



MR. BAYNES WITH A CHICKADEE FRIEND.

prevent a squirrel from detaching the suet by cutting one of the cords with his teeth. When the loose ends are cut off the feeding station is complete.

"The simplest way to feed the seed-eating birds is to scatter the food on the ground. It should not be thrown on soft, deep snow. Seed and most other foods quickly sink into soft snow, and, besides, most birds do not like to flounder about in the snow-drifts in search of food. The snow may be swept or shoveled away, but personally I much prefer to trample it down. It is not easy, even with a snow-shovel, to clear thoroughly a generous space where there are weeds or long grass. Cleared spaces are apt to become wet or muddy and are usually unsightly. The trampling process is quicker, much quicker, if we have snow-shoes; it makes no unsightly patches, and, moreover, the well-trodden snow forms a pleasing background against which to see our feathered guests."

Our readers will look forward with pleasant anticipation to the publication of his book which will show many photographs that will increase our interest.

### Beware of Inoculating Trees.

The State Zoologist of Pennsylvania has issued a public warning against the careless or unskillful use of the new potassium cyanide method of protecting trees from insects, and of other similar methods of "vaccination" with potassium chlorate, iron sulphate and other chemicals. No doubt there is a valuable idea in this new device, but it has still to be worked out in details, and the tree owner will do well to experiment, for the present, with only such trees as he is prepared to lose if he makes a mistake.

The State Zoologist especially warns the public to be on its guard against persons who propose to apply the new methods commercially. Many persons have already lost whole groves of valuable trees from ignorant overdosing with powerful remedies.

Further information in printed form, may be had by applying to H. A. Surface, D. Sc., Department of Agriculture, Harrisburg, Pennsylvania.

* * * * *

The above from a contributor was referred to The Frost & Bartlett Company of Stamford, Connecticut. That company replies as follows:

"I read with interest your notes relative to the new potassium cyanide method of protecting trees from insects and other similiar methods of "vaccination." Such methods to date have always proved to be invariably "fakes." There seems to be but little doubt that in time we will find a method of inoculating trees the same as in the animal world, but all of these chemicals have been tried in the past and have proved to be of no value, in many cases injurious, in fact, so much so that we find trees have been actually killed by their use. Tree owners should certainly be warned against the use of any such methods and the practice should be condemned on the face of the proposition."

---

### A Trophy Winner.

Spratt's Trophy for the best dog in the 1915 Westminster Kennel Club Show was won by George W. Quintard's Matford Vic.. Mr. Quintard has also won a leg on Spratt's Brace Special with Wire Boy of Paighton and Matford Vic.

# The Nature Photographers

### The Inventor of Film Photography.

Through the kindness of the Ansco Company, Binghampton, New York, we are able to present to our readers a photograph of the Goodwin Memorial Tablet recently unveiled in the Free Public Library at Newark, New Jersey. Here honor and financial remuneration come after the inventor's death. Extended litigation regarding Dr. Goodwin's rights finally resulted in securing for Mrs. Goodwin a handsome, though tardy, remuneration for her husband's labor in giving to the world so important an invention. That this man should die without financial remuneration for the wonderful invention that has given wealth to so many, and has been so appreciated by photographers, is astonishing and deplorable. We quote the following from "Portrait," a magazine published by the Ansco Company:




THE GOODWIN MEMORIAL TABLET.

"The United States Circuit Court of Appeals affirming the decree against the Eastman Kodak Co., makes this sad commentary: 'Truly an extraordinary and deplorable condition of affairs! But who was to blame for it—Goodwin or the five examiners who improperly deprived him of his rights during eleven years?'"

We have no disposition to argue regarding the injustice but we believe that every naturalist who uses a camera can but feel a sincere regret that Dr. Goodwin never had either honor nor money during his life for his great gift to all students of nature. This is one of the most pathetic cases that we have ever heard of. Some one, somewhere, has been to blame. To Dr. Goodwin be all honor and praise for the great benefit that he has conferred on humanity.

### The Hermit Thrush.

By Addison Ellsworth, Lestershire, New York.

When shadows deepen and the gray of night,
Creeps slowly down o'er the tired earth,
When the day-birds stop their noisy flight,
And warblers cease their songs of mirth;
Then quickly from out the evening hush.
O'er the darkning woodland, calm and mute,
Sounds the silvery notes of the hermit thrush,
Like enchanting music from an elfin flute
Well I remember, in days of childhood,
I loved toleave themarts where people throng,
And wander alone in tangled wildwood,
There to listen to thy marvelous song.
But speeding years pass by on pinions fleet,
Taking me farther from those happy days;
Yet still I love to seek thy lone retreat
And revel in thy trilling roundelays.
Thou art of nature's rarest concepts,
Oh, bird inimitable, supreme divine,
Thou mysterious sprite of sylvan depths,
The solitudes of the forests are thine.
Apart from feathered clans of lesser birth,
Perched high above the plebian throng;
On topmost limb, far from the earth,
Pour forth thy soul in evensong.

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### Two Expressive Photographs.

BY E. R. HULBIRT, AZUSA, CALIFORNIA.

No. 1. This picture shows a quiet little winter scene, and derives its chief interest from the fact that it was taken by moonlight one evening about 10 P. M. An ordinary kodak was used, and an exposure of one hour was allowed. Although the moon was shining so brightly that an ordinary newspaper could be read without difficulty, yet the picture shows an entire lack of shadows. This is due of course to the long exposure required and the shifting of the shadows in that length of time. To secure the best effect from this picture, it should be viewed at a distance of not less than three feet. Moonlight photography is interesting because a moonlight landscape presents a uniform coldness which it is impossible to produce by daylight. The subdued light with absence of all shadows gives a picture very different from an ordinary landscape view.



NO. 1: A PHOTOGRAPH BY MOONLIGHT.



NO. 2: A CAMERA RECORD OF A REMARKABLE BEETLE.

No. 2. The beetle shown in this picture was a chance acquaintance made during a stroll one day. They are commonly known as road beetles because they are frequently found along dry and dusty roads. They have a peculiar habit of humbly bowing their heads to the ground at the approach of anything, and they will remain in this position for some time. Whatever the reason is for this peculiar behavior, it is clearly a protective act. The ostrich will poke his head under a bush and stand perfectly quiet, believing himself effectually hidden when his head is out of sight. Possibly this beetle thinks himself hidden when his head is thus partially concealed. It is more probable that the hard black pointed body which is presented in this attitude of defense is not considered a morsel by the roadrunners and other birds.

When I first saw this beetle, he promptly took up his attitude of defense. I watched him for several minutes. He evidently grew tired of waiting for the attack, so he started for the

grass and weeds at the roadside as fast as he could travel. I tried then in many ways to make him pose for his photograph, but uniformly without success. He became excited and tried his best to escape. I finally began stroking his back in the manner a cat so thoroughly enjoys. The beetle enjoyed the process so well that he lost all his fear and remained perfectly still for some time after I had ceased stroking him and had taken his photograph. I have since found this to be a very effective method with other creatures. Even the horned toads and ghekkos squat down and go to sleep under the influence of gentle stroking and petting.

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The pleasures of the intellect are permanent, the pleasures of the heart are transitory.—Thoreau.

## Photograph of a Cyclone.

BY G. F. GREEN, BREWSTER, WASHINGTON.

The accompanying picture of the Waynoka cyclone or tornado was taken by me during my residence in Oklahoma some few years ago. It was made with an old Vive camera, the lens stop being f-11, the exposure one twentieth of a second, the time about five p. m. in April. The camera was pointed directly towards the sun, the tornado being between it and myself as the exposure was made. As the light was coming from the clear horizon behind the tornado, my side of the funnel was in shadow but fine light and shadow effects were produced in the madly rolling clouds on either side and above. These clouds seemed to be rolling violently in various directions and they would certainly have made a most



AN ASTONISHING PHOTOGRAPH OF A CYCLONE.
Taken in Oklahoma by G. F. Green, Brewster, Washington. Copyrighted 1898




A RARE SHARK WITH A RARER STOMACH!

wonderful moving picture had a suitable camera been available. This tornado caused no loss of life, but buildings, lumber, furniture, cooking utensils and clothing were scattered for many miles. Should one be fortunate enough to meet one of these interesting phenomena when he has a camera with him, he should remember to expose for the clouds and not the landscape below. In the negative made the landscape is clear glass and therefore comes black and entirely void of detail as shown in the picture. The negative was made on an ordinary plate and developed in the usual way, care being taken not to develop too far but to keep it soft as one would do in developing a cloud negative.

### A Rare Shark with Rarer Stomach!

Stanford University, California.

To the Editor:—

I am sending you a photograph of a very rare shark, *Rhinodon typicus*, from the Philippine Islands. It was received from a Stanford engineer, Mr. W. F. Cameron, Zamboanga, P. I. In the stomach of this shark was a remarkable collection of articles—seven leggings, forty-seven buttons, three leather belts and nine shoes. The question is what became of the other legging and the other shoe! Probably the shark swallowed the discarded outfit of some military company.

Very truly yours,
DAVID STARR JORDAN.

### What's in a Name?"

"Wilson's Photographic Magazine" will in the future be known as "The Photographic Journal of America." This change of name is not accompanied by any change in ownership or in management; both the business and the editorial staff remain as before, and will have the aid of the ablest authorities on photographic topics. Neither does the change indicate any change in principles, nor any radical departure from the traditions of the past, but a clearer consciousness of higher aims than ever before and a larger appreciation of their application.

The price has been reduced from three dollars to one dollar and fifty cents. We congratulate Mr. Thomas Coke Watkins upon the beautiful and useful magazine that he is producing. It is a gem in printing, editing and photographic interest.

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That reader who most fully appreciates the poet, and derives the greatest pleasure from his work, himself lives in circumstances most like those of the poet himself.—Thoreau.

# THE STARRY HEAVENS IN APRIL

By Professor Eric Doolittle of the University of Pennsylvania.

## A Wonderful Pair of Suns. The Spiral Nebulas. The New Comet.

April, the first of our Spring months, has its southern skies made beautiful by the great Leo, that bright star group which has now reached its very highest position in the evening heavens. The western stars of this bright constellation will be seen to form the figure of a very perfect sickle, the lower end of whose handle is marked by the brilliant Regulus, the Royal Star or Lion's Heart, which for five thousand years was believed to pre-eminently rule the affairs of the heavens.

## The April Stars.

High overhead we now see the Great Bear covering a large area of the sky in all directions from the zenith. Below, but closely following this constellation, is the great Driver, who, with upstretched arms, forever drives the Bear before him in its ceaseless journey around the Pole. In contrast with these two very large and striking groups, we find in this region the very beautiful and delicate Northern Crown, and that most attractive, filmy maze of stars known as the Maiden's Hair.

That area of the heavens, which lies between the Great Bear, Bootes, and




Figure 1. The Constellations at 9 P. M., April 1. (If facing south hold the map upright; if facing west, hold West edge below; if facing east, hold East edge below; if facing north, hold map inverted.)

Virgo, may at first appear to be a rather vacant region, but if it is studied on a dark night, and especially if it is examined with a pair of opera glasses, it will be found to be a region of wonderful beauty. Above the beautiful swarm of stars already referred to there is a region of equally delicate, though less numerous stars, which form the constellation of the Hunting Dogs. Two of the stars of this little group (marked A and B in Figure 1) are far brighter than any of the others; these are the two Dogs, Chara and Asterion, held by Bootes in his "leash of sidereal fire."

### A Wonderful Pair of Suns.

Asterion, at B, Figure 1, is a beautiful double star whose two components are described as being white and lilac colored, respectively. These two strange suns are drifting through the depths of space together and are therefore known to be physically connected, just as the earth and moon are connected, but the path which the smaller sun pursues about its giant neighbor is so very large and it is moving so slowly along this great path that no change in its position has been certainly detected from the careful measures of the past sixty years. Certainly tens of thousands of years will be occupied by it in making each of its revolutions. Truly a majestic and impressive celestial system!

### Spiral Nebulas.

At the point C, below the end of the handle of the Great Dipper, there is a very remarkable spiral nebula, while at the point D there is a pair of these singular objects, and at E and F there are still others. Even in a moderately large amateur's telescope, however, none of these really wonderful objects would appear otherwise than as a very faint, misty patch of light, and in such a glass the nebula at F would probably be wholly invisible.

It was not until after the invention of photography that the true structure of these very difficult objects was clearly seen. Figure 2 is from a photograph of the nebula at F, obtained by exposing a delicate photographic plate for several hours to this part of the sky, and it shows the extremely complicated spiral and knotted structure of the nebula very clearly.

It is the belief of most astronomers that such nebulas are great clouds in the depths of space, composed of mete-

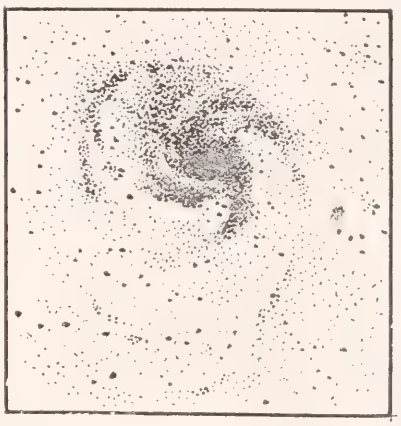


Figure 2. Photograph of the Spiral Nebula at the point F, Figure 1.

oric material, cosmic dust, gases, and matter in a radiant condition, and that they are very slowly shrinking together under the influence of their own gravity. If this is true, the principal part of a nebula, such as that in Figure 2, will accumulate at the center, forming there a great central sun, while many of the knots and condensations which we see on the spiral arms will ultimately become worlds, more or less like our own, revolving about the immensely larger central body.

An alternate theory, held by some astronomers, is that the spiral nebulas are really universes of stars, almost infinitely far away from our own Milky Way clusters of which our sun is a part. While the general appearance of the photographs of these nebulas may perhaps lead one to doubt the reasonableness of this second theory, yet it is by no means a wholly impossible one, and in fact, much evidence can be brought forward in its favor.

If in the course of one or a few centuries any motion or change in one of these nebulas shall be definitely detected, however, this will at once dispose of the second theory, for evidently the time required for perceptible motion in an almost infinitely distant stellar universe must be reckoned in millions of years. And in case it is thus established that these objects are in and part of our Milky Way cluster,

we will be justified in believing from the mathematical investigation of such a swarm that their ultimate destiny is to become, each of them, a sun sur-

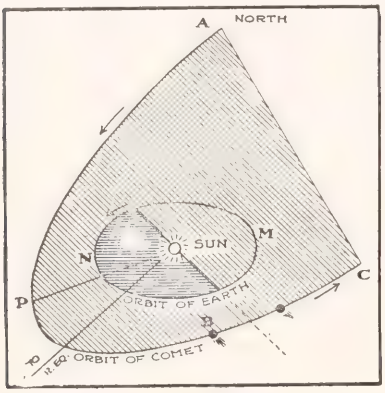



Figure 3.—The orbit in space of the new comet.

rounded by smaller worlds. Either hypothesis is a most interesting and attractive one.

### The Star Cluster In Canes Venatici.

At the point M, on a line from the star A, (Figure 1) to Arcturus, at H, but somewhat nearer to H, there is a remarkable cluster of thousands of closely packed stars, no less than one-tenth of which are suns which are con tinuously varying in brightness. This is a very curious and thus far wholly unexplained fact. Evidently there is here some unknown cause which acts through this great cloud simultaneously on all of these suns, or else the many stars vary because their origin and past history have been substantially the same. We do not even know the cause of the striking variations observed in many of the isolated bright stars of the sky, nor is it certain whether all of the clusters are a part of our Milky Way cluster or not. A further study of these wonderful objects will doubtless in the future throw much light on these and many other most interesting questions.

### The Planets In April.

Mercury, which reached its greatest distance west of the sun on March 20, draws steadily nearer this body throughout the month, and after the first few days of April is wholly lost in the sun's rays. On the evening of April 3 it passes to the east of Mars and both planets may possibly be seen for a few days before and after this time, forming a beautiful figure in the morning dawn. They must be looked for very near the ground, a little to the south of the east point for about one and one-half hours before sunrise. Mercury passes to the east of the sun and becomes an evening star on May 1.

Venus is still brilliant in the morning sky, rising about two hours before sunrise. Since February 6, however, it has been steadily drawing nearer the sun and it is therefore neither so bright nor in so favorable a position for observation as it has been during the past few weeks.

Mars also remains close to the sun in the morning sky. It may be detected rising almost due east about one and one-half hours before sunrise. The planet is moving northward among the stars; it crosses the celestial equator on April 19, and at this time it will rise exactly at the east point of the horizon.

Jupiter is too near the sun to be satisfactorily observed, but its distance is continually increasing, and by April 30 it may be found very low in the southeast for about two hours before sunrse.

Saturn, the only bright planet in our evening skies, is still in excellent position for observation. It is moving slowly northeastward, almost on the boundary line between Taurus and Gemini. The rings are now very widely opened out and it will be found a beautiful object for study with a small telescope.

### The New Comet.

During the early days of March a rather bright comet could be seen in the early morning sky, but this body has since been rapidly receding both from the sun and from the earth and it is now a difficult object in any telescope. This comet fell toward the sun from the region of the stars along the path AP, (Figure 3), reaching its nearest distance from the sun, at the point P, on last August 2. At this time it was one hundred and thirty-nine millions of miles from the sun, one and one-

half times as far away from this body as the earth is. It therefore always remained far outside of the orbit of the earth. When discovered, on February 9, the comet was in the position B, and moving about the sun in almost exactly the same direction as the earth moves. Since this time it has been receding along the path BC and thus moving northward among the stars and at the same time increasing its distance from us. As far as can be learned from the observations, the path of this comet is not a closed one, but the infinitely long curve called a parabola; there is thus no reason to suppose that after having passed around the sun and thus disappeared from our view it will ever return to be seen by us again.

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### The Occurrence of Easter.

(Written for March issue).

The center of the sun will this year cross the Celestial Equator on March 20 at 11 hours 51 minutes 16 seconds A. M. (Eastern Standard Time), and at this instant spring will begin. Our present calendar depends wholly upon the position of the sun in the sky; as the succession of the seasons, is, of course, caused by the motion of the sun alone, this is by far the most natural and convenient body to employ for the reckoning of time. In earlier times, however, the calendar was based almost wholly upon the moon. The Mohammedans still employ a purely lunar calendar; their year consists of twelve lunar months, and is therefore about ten days shorter than ours. It follows as a consequence that any fixed date in their calendar will occur about ten days earlier each year, (by our reckoning), and will hence move through all of the four seasons in about thirty-six years.

Though the moon has thus been wholly discarded from our civil reckoning, it still governs the occurrence of church days; thus Easter, for example, is always the Sunday immediately following that full moon which occurs first after the Vernal Equinox. The Vernal Equinox is this year on March 21; the next full moon is on Wednesday, March 31, and the following Sunday (April 4) is therefore Easter Sunday.

It is thus evident that the date may vary as much as five weeks in different years. During the past century Easter occurred as early as March 23 three times, and once (in 1818) it occurred on March 22. Its earliest occurrence during the present century was in 1913, March 22. Next year we will also have a very late occurrence, the date being April 23.

It is thus seen that while the date of occurrence of the present year is a rather early one it is by no means remarkably so. The average of all possible dates is April 8.

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Children study astronomy at the district school, and learn that the sun is ninety-five millions of miles distant and the like, a statement which never made any impression on me, because I never walked it, and which I cannot be said to believe. But the sun shines nevertheless. Though observatories are multiplied, the heavens receive very little attention. The naked eye may easily see farther than the armed. It depends on who looks through it. Man's eye is the true star-finder, the comet-seeker. No superior telescope to this has been invented. In those big ones, the recoil is equal to the force of the discharge. "The poet's eye in a fine frenzy rolling" ranges from earth to heaven which the astronomer's eye not often does. It does not see far beyond the dome of the observatory.—Thoreau.

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The United States Weather Bureau has daily reports from 4,391 different stations, or 144 stations for each 10,000 square miles. By contrast with this, the corresponding records for the British Isles are obtained from 5,370 stations, or 420 to each 10,000 square miles.

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That ancient phrase about "the teeming millions of the East" will need to be revised in the light of new facts. It now appears that while the population of China is about one hundred persons to the square mile, and of India, 178; the United Kingdom supports an average of 374 human beings on the same area, the Netherlands, 475, while Belgium before it was devastated by the Germans had no fewer than 659.

## Wanted: An Astronomical Observatory.

THE GUIDE TO NATURE for January, 1909, (then published at Stamford, Connecticut,) made an extended announcement of the intention to establish ARCADIA at Sound Beach. In the list of ten buildings or departments desired was:

**2. Astronomical Observatory.**

The early sketches and plans for old ARCADIA gave prominence to this feature and made it conspicuous in the foreground. Next to the Office Home, first in the list, the observatory was to be the most prominent and the work in astronomy the most extended. Next was to be work with the microscope. "The infinitely great and the unseen small" were the keynotes of the establishment.

We who have watched the inside workings of ARCADIA during these six years have seen nothing more astonishing nor more regrettable than that there has been absolutely no provision made for the chief things for which it was established!

For the "unseen small" we are now well provided. The Welcome Reception Room of new ARCADIA is the climax of good things microscopical. Here microprojection has been seen by students and visitors unexcelled (perhaps unequalled) anywhere else. The microscope in biology is an important part of our exhibition work.

But here is the anomaly: during these six years we have had no facilities for helping those interested in astronomy. In the magazine one of the most important and most appreciated departments is "The Starry Heavens." We have published astronomy and exhibited microscopy. Now let us balance things. We appeal to members and friends for an astronomical observatory, with a good telescope. Many have expressed interest in the publication of astronomical articles and a desire to study the heavens in an observatory. ARCADIA needs and deserves an observatory.

There are several parts of the state well supplied with moderate sized observatories. There is none in this part. Hartford has several. Middletown and New Haven have their university observatories that the public may visit, and several belonging to amateurs. Fairfield County, especially this populous southern part, should have an observatory. ARCADIA, with its easy access by trolley and train, is the logical location. It will be free to students and visitors. In California, the writer visited an observatory erected by an amateur. At his death, so great was the popular interest, that it was continued by the trolley car company. The car fares bring in a substantial profit. Admission to the observatory is free. There is no subject in nature of which there is less popular knowledge or more desire to know. Most persons have some idea of four-footed animals, birds, insects, trees and flowers. But how few know the mountain scenery on the moon, the rings of Saturn, or "the greatest thing in the world," yet absolutely unknown to most persons, the nebula of Orion.

Twenty years ago I had an astronomical observatory at Portland, Connecticut. It was crowded with visitors almost every fair night—sometimes almost all night. I have at various times owned three telescopes. I am familiar with various makes and have had experience in using telescopes and observatories and in instructing and interesting the public. Have taught astronomy in the schools more than fifteen years. Will our kind friends please give us an observatory and a telescope. They shall be used to good advantage. They will be successful as are all the other ARCADIA facilities that have been provided by members and friends.

The appeal to restore ARCADIA, to build the Reception Room, and to provide a piano have met with ready response. They are paid for, and we believe every contributor is pleased by the efficient and unselfish manner in which they are used.

I believe that an astronomical observatory will meet with even greater public favor because it will supply a greater deficiency.

ARCADIA has a good location. There will be no expense for that. The horizon lines in Sound Beach are remarkably clear and even. There are no strong lights in the streets. Nearly all trains are now run by electricity, so there will be no smoke trouble as there has been until very recently. ARCADIA is now well equipped with astronomical slides and apparatus for projection. An illustrated talk can easily be given in the Reception Room and then the visitors can be taken to the observatory to really

see such objects as are visible that evening. This is the plan of the large observatories.

I will freely give my time to plan and care for the construction, and will even "sit up nights" all the rest of my life to show it to those who want to know, yes, even to those who have at first only idle curiosity.

Cordially yours,
EDWARD F. BIGELOW.

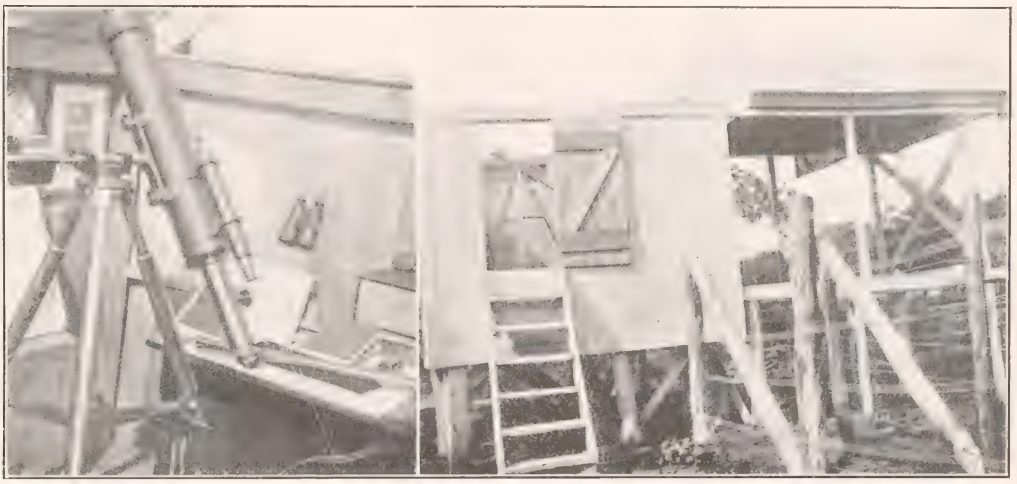
### The Pursuit of Happiness.

In the pursuit of happiness mankind follows many ideals. To some financial success presents the chief end of life. For others, fame and power represent the most sought for ambition. With others, it is luxury and ease which most attract. As a rule these represent the average ideals which rule the human heart.

Everyone desires happiness, each in his own way. Those ideals which are based on selfish gratification are not enduring ones. When the object sought has been attained it seldom brings the happiness which was anticipated. On the other hand those ideals which are based on unselfishness and doing good to others; those efforts which have sought individual or race uplift; which have secured personal happiness by bringing happiness to others, have constituted the only ideals which do not wither as they are seized. This is the chief lesson which the human soul has to learn. Without this realization life becomes empty and unsatisfied.—The National Humane Review.

### Chicken Houses and Observatories.

So far as information has reached this office, chicken houses and astronomical observatories are equal. Each has had an inning and scored about equally. It comes about in this way. Eighteen years ago the editor of this magazine had an astronomical observatory at Portland, Connecticut. The telescope was sold when the residence of the user was changed to Stamford. The next occupant of the Portland



A SIMPLE FORM OF OBSERVATORY THAT BECAME A CHICKEN HOUSE.

premises used the observatory for chickens. Thus the empire of chicken houses was a gainer.

But recently the tide has turned and observatories have won from chickens.

Professor Eric Doolittle of the University of Pennsylvania, the editor of our department, "The Starry Heavens," writes of their new observatory as follows:

"I take pleasure in enclosing the picture of our house recently constructed for our four inch equatorial, concerning which I wrote to you some time ago. This doubtless tells you more than a long description would do. The total cost of all was somewhat less than one hundred dollars, but the frame of the building was already at hand (it was, in fact, a chicken house), and this saved some expense. I doubt if the whole cost would have exceeded

this amount in any case as we had to pay twenty-five dollars for having the building moved, and we shingled the whole over the clapboards, and had we not had the original building we would not have put the clapboards on.

"The roof rests on Lane's Barn Door Hangers, No. 3, which cost us altogether twelve dollars and thirty-



A CHICKEN HOUSE THAT BECAME AN OBSERVATORY AT THE UNIVERSITY OF PENNSYLVANIA.

five cents. The whole works admirably; it is easy to push the roof off as shown in the picture, and when this is done the telescope is practically out-of-doors. The view through the door makes it appear as if the head of the pier is much lower than the top of the walls, but this is the result of the perspective merely. Actually the top of the pier is a few inches higher than the top of the walls."

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The general magnetic survey of the earth undertaken by the Carnegie Institution is expected to be finished in about two more years. It has now been going on for a decade, already includes some three thousand stations in more than one hundred different countries and groups of islands, and has involved more than 160,000 miles of ocean travel. The area included stretches from 80 degrees north to 70 degrees south, about nine-tenths the total surface of the globe.

### A Very Old-Time Yankee.

Hugo Black tells this story of his learning what he calls the American language. He rushed on a tram just as it was pulling out of the station and said to a friend: "I tell you I caught this train just by the skin of my teeth." The Yankee friend replied: "Bravo! Well done! You are catching on to Yankee-ism pretty rapidly." The witty clergyman replied: "You Yankees claim everything but do you claim that Job was a Yankee? Job uses the expression in his nineteenth chapter and twentieth verse: 'I escaped with the skin of my teeth.'"

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Lonesome? Well—everybody's lonesome in a way. But the cure for lonesomeness—the permanent cure, the cure that will sustain us in old age when the comrades of youth are falling thick and fast around us—is self-sufficiency. It is the habit of resourcefulness. This children learn best in quiet homes where entertainment is not lavishly provided.—A Plain Country Woman in "The Ladies' Home Journal."

When you think your walk is profitless and a failure, and you can hardly persuade yourself not to return, it is on the point of being a success, for then you are in that subdued and knocking mood to which nature never fails to open.—Thoreau.

# RECREATIONS WITH THE MICROSCOPE

Edited by Dr. V. A. Latham, 1644 Morse Avenue, Rogers Park, Chicago, Illinois.

## Chara and Nitella to Show Cyclosis.

Select vigorous growing young "leaves" and mount on plain or hollow ring slide in water. Examine under the microscope to find the cells which show cyclosis, i. e., flowing motion of the protoplasm—most clearly. Note their contents and use low and high powers to study. Mount fruiting branches showing various stages of development of antheridia and oogonia in water in hollow ground or open top cells. Crush and tear apart mature antherida, oogonia, and spores in water on plain slides. Test with iodine of a weak solution by putting a small drop at the upper edge of the cover-glass and watch as its brown color diffuses down through the water while the starch grains in the cells immediately turn blue. For permanent preparations the water can be displaced by using a drop of Hantsch's fluid (glycerol-glycerine one part, alcohol three parts and water two parts) putting a drop at one side, and at the opposite side touching the water with bits of blotting paper and gradually drawing the fluid through. It can be boiled slightly to drive out air and keep adding fluid till the water and alcohol are driven off, and then glycerol added to fill the specimen and *cool quickly*. Later ring very carefully, being sure no glycerol is around to prevent the cover and cement from sticking fast.

## Microscopical Art at Its Best.

If you have a microscope you should obtain at least a few of the high grade microscopical slides made by Powers & Powers, Station A, Lincoln, Nebraska. The technique is perfect, and the slides are the best, unquestionably the best, that have come to ARCADIA. The prices are reasonable. The subjects are for the greater part aquatic. Get their catalogue.

The best slides that we have received from a foreign worker and in wide range of subjects are made by J. B. Howard, 45, Frenchgate, Richmond, Yorks, England. For cross sections of woods and for a variety of other subjects his work is fine.

We must also remember the name of Walter F. Herzberg, 160 East Ontario Street, Chicago, so famous for his beautiful slides. Especially is he skillful in the Diatomaceae.

Miss M. A. Booth, 60 Dartmouth Street, Springfield, Massachusetts, also continues her excellent micro-slides and photographs.

Miss E. M. Drury, 45 Munroe Street, Roxbury, Massachusetts, supplies botanical slides and school series.

This is not an advertisement but an effort to extend the pleasurable use of the microscope.

## The Micrologist.

So far two volumes of this little magazine have been issued at a nominal price 1-6 quarterly. The subject matter is excellent and covered in a very convenient manner.

Part 1. Introduction The Microscope
Lenses and Their Magnification.
Angle of Aperture and a Method of Determining the Same.
Dry Mounting and Formula.
Making Cardboard Rings and Ringing, with excellent photographs of the process.

With the number is a plate with five figures showing (1) Dried Leaf of Onosma, (2) Dried Seeds of Spergularia marina, (3) Spicules of Gorgonia, (4) Heap or Spread Slide of Polycistina and (5) Eggs of Feathered Gothic Moth.

Another issue treats of Protozoa and forms a handy little monograph in itself and plate. Another, sponges, three

plates of barley sections, wheat and pollen with details of growing, treating staining complete and the smuts.

It must be seen to appreciate the value and help such a journal is to any worker. Unfortunately the title is apt to cause confusion with the little journal of the Postal Club called "Journal of Micrology," of which a notice has been made. The quarterly is produced from the micro dealers, Flatters, Milborne & McKechnie, Limited, of 16 Church Road, Longsight, Manchester, England, and Mr. Flatters's long connection as a teacher in botany, science and textiles in the Technical School and with the Microscopical Society renders it certain that every effort to make the subjects authentic, the slides issued or gross material of the subjects correct and the excellence of the work will be assured to all subscribers.

### Journal of Parasitology.

Professor Henry B. Ward, of the American Microscopical Society, now head of the Department of Zoology in the State University of Illinois (Urbana) has published the first and second parts of "The Journal of Parisitology," a quarterly devoted to medical zoology. This takes in notes on animal parasites, whether protozoa, vermes or arthropoda, concise technical notes of interest to parasitologists, and brief reviews of monographs and books, the morphology, life history or biology of zooparasites. The urgent need for a journal is well seen in the growing importance of the subject from a medical, veterinary, agricultural and financial standpoint as well as the economical and scientific, and we hope the journal will speedily receive the support it needs. The subscription price is two dollars a year, and a large amount of valuable material on hand insures full numbers.

### List of New Officers.

The new officers of the State Microscopical Society of Illinois are Francis T. Harmon (expert photomicrographer), President: Jeremiah A. Hynds. First Vice-President; Harold S. Skelton (of The Bausch & Lomb Optical Company), Second Vice-President; Frank I. Packard, Treasurer; H. F. Fuller, M. A., F. S. Sc., Curator, and V. A. Latham, Corresponding and Recording Secretary. The Trustees are B. U. Hills, M. E., Dr. I. J. W. Golden, W. G. King, Albert McCalla, Ph. D., F. R. M. S., and Dr. S. S. Graves.

### Paintings of Arkansas Wild Flowers.

Miss Orrie Riley, 626 Congress Ave., Pacific Grove, California, has made many paintings of Arkansas wild flowers and offers some for sale, making the following enthusiastic statement:

"They certainly are intensely interesting to any one caring anything for our native wild flowers. I will state here without fear of contradiction that there is not another place in the whole world that contains such a variety or as beautiful wild flowers as certain places in the Ozark Mountains of Arkansas. I grew up in the mountains there and it was my ambition to paint all the most beautiful flowers that grew wild in the state. I had over forty paintings containing some forty-eight or fifty varieties, but have sold a few at a time till I have only fifteen left. These fifteen I would like to sell in one collection. It is my intention to return to Arkansas and make a photograph collection of the wild flowers in their native haunts. I will need more funds to defray the expenses of the trip and for that reason would like to dispose of the balance of my wild flower paintings this spring."

The little amphipod Crustacean, *Eucrangonyx gracilis*, abundant both in surface and in underground streams in various parts of the United States, has fallen under observation by the Carnegie Station for Experimental Evolution.

It transpires from careful testing by the best modern devices that those individuals who happen to be living in caves, and have almost no body pigment except in the eyes, are slightly less sensitive to light than the similar individuals which live in the open streams. On the other hand, they prove by way of compensation to be slightly more sensitive to touch.

Here, then, is the first faint beginnings of the familiar difference between the permanently blind cave dwelling species of crustaceans and their normal relatives which live outside.

# CORRESPONDENCE AND INFORMATION

### Snakes Charm Their Victims.

Augusta, Wis.

To the Editor:

In your December number, just received, page 243, under the title, "Feeding Habits of Snakes," I find the following: "This trick of striking and letting go seems to be the only foundation for all the old yarns of serpents fascinating their victims."

My entire boyhood was spent in Southwestern Nebraska, on a cattle ranch, and it fell to my lot to "herd" the cattle throughout the summer seasons for a good many years. This is a semi-arid country, and the principal grass was "buffalo grass," a grass that is woolly and lies very close to the ground—so close that snakes crawled over it instead of through it, and if one were to observe their actions, there would be nothing to obstruct the view.

On one occasion, I saw a meadow lark fluttering and jumping sidewise in an arc of a circle of perhaps forty degrees, and a radius of perhaps sixty feet, screaming all the time, and when she got to one end of the arc, she would flutter and flounder to the other end, each time approaching a little closer to the rattlesnake, which remained motionless, with head erect, looking at the bird, except that it darted its tongue out and back.

The bird gradually approached the snake, until within a very few feet, when it lay trembling and screaming. At this point, I interfered, and the bird, as well as it could in view of its terror and exhaustion, got away, and so far as I could observe, when a few minutes had elapsed, was entirely over all ill effects of its experience.

On another occasion, I saw exactly the same thing, except that instead of a bird, one of the common western gophers was the victim. It screamed, and jumped sidewise from end to end of the arc, tail erect, back bowed up, approaching a little nearer the rattler each time, until finally it was lying prostrate within a few feet of the snake, when again I interfered, and the gopher got away, and aside from its evident exhaustion, from which it seemed soon to recover, was apparently unharmed.

Had these animals been struck, I feel quite sure they would not have so promptly recovered, to say the least, and I have always felt that there was some virtue in the claim that snakes (at least the rattlesnakes) "charmed" their victims, at least in some instances.

Yours very truly,

WM. A. WILLIAMS.

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### Disappearing Wild Life.

Seattle, Washington.

To the Editor:—

I wish to express my appreciation of the work you are doing in preserving the animal and bird life of the country.

I came from a family who have helped cut down the forest and hunt the game from Plymouth to the Pacific and as a boy there was none more keen to hunt than was I. I have restrained the wish and where others have killed many my record has been few and for ten years I have not used a more dangerous weapon than the camera.

In 1870 along the west coast were literally millions of ducks and geese. To-day I ride from Seattle to San Francisco and see not a dozen waterfowl on the trip. In the valley of the Yukon in Alaska, they are more scarce each year. I have seen the buffalo exterminated, the antelope almost disappear, the elk nearly vanish, and the mountain sheep become rare. Every kind of wild game bird and animal on the Pacific coast from the Arctic Circle to the Mexican boundary has been driven to the narrowest limits. I hope that the work such men as yourself and Dr. Hornaday of New York are doing may save the last remnant of the vast numbers of wild birds and ani-

mals that formerly lived in our land from entire destruction.

Your magazine is beautifully illustrated and the bird drawings are simply splendid. I extend to you my best wishes for success.

Very truly yours,
C. L. ANDREWS.

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### Where Bears Abound.

Pagosa Junction, Colorado.

To the Editor:

My wife has long desired to possess a bear rug of her own killing. During our recent vacation in the mountains luck came her way. Before fortune smiled, she had been visiting bear traps for eight days out of ten, and had been pretty continuously in the saddle for that length of time. On one occasion she and my partner trailed a big fellow for three-quarters of a mile through the woods only to find that he had succeeded in getting his foot loose from the trap. I am aware that a lover of nature is not supposed to kill animals, but to a lover of his family and his stock the thing has a different look. Bears are increasing in the vicinity of our ranch and are a menace. One seemed to have taken a contract to do the butchering for the lesser lights of his kind, and one spring cost us about two hundred and fifty dollars. He would kill a three year old steer, eat his fill and leave the carcass for his gang to finish. Only the hide and the bones were discarded as the remnants of one night's banquet. This in addition to having them running at large where children must go long distances to school, makes them undesirable neighbors.

Nine have been trapped and killed in the vicinity of our ranch this season and every one was a male. The females seem to keep themselves and their young out of trouble.

I enclose a photograph of the bear Mrs. Rogers shot with her camera and, later, with a rifle. The woods were deep and the day was cloudy. She had therefore to risk a time exposure, and bruin began to move his head, but she closed the shutter in the nick of time. Kindly criticise the result. The timber is spruce and quaking aspen. You will note that the trap and chain are attached to a clog by a clevis. The clog is a piece of spruce tree that is difficult for two men to carry. The clevis is fastened at about two feet from the end so that the clog is sure to foul everything in its line of movement and yet a bear of any size thus hampered will manage to travel for three-quarters of a mile through thick timber in one night. The one that got loose had wound his chain around a spruce tree



THE BEAR THAT MRS. ROGERS SHOT.
This bear killed many steers and menaced the children.



A PICTURESQUE VIEW BY THE LAKE.

pulled it out by the roots. Trappers believe that they unfasten the clog, when it fouls, and lift it over logs.

The picture showing a part of the lake was taken from a position about fifty feet from where bruin No. 2 objected to being photographed and demonstrated that hobble skirts are undesirable on a bear hunt. The day was too dark and the bear too restless for the negative to be successful.

Very truly yours,

H. A. Rogers.

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### A Good Suggestion.

Adams, Massachusetts.

To the Editor:—

In the early days of spring when the warm sun begins to melt the surface of the snow, I have often noticed something that resembles the spinning work of spiders. What appears to be their silken threads are plentifully spread about, sometimes covering areas of considerable extent. Later on this cobwebby material becomes coarser and more noticeable. Apparently the threads then cohere. They are then much soiled. Here is something for the young folks to investigate. Who will be the first to observe this curious phenomenon and tell The Guide to Nature what it is?

W. I. Beecroft.

### Almost Fatal Nettle Stinging.

Dr. Otto Lutz, Professor of Biology in the Instituto Nacional de Panama, reports a most unpleasant experience with the great stinging nettle of the Pacific coast of Central and South America. The plant, *Jatropha urens*, stands about a yard high, and although it does not belong to the same family as our common nettle, all its parts, trunk, leaves, flowers, and even fruit, are covered with long, hard, glossy stinging hairs that have the same structure as those of the northern form.

Dr. Lutz inadvertently grasped the plant with one hand; was stung, he discovered, by about ten hairs; and received poison amounting, he reckons, to something like 0.00005 cubic centimeter. Within half an hour, his hand had swollen to monstrous size. The swelling extended up the arm, the entire body began to itch, and red blotches appeared everywhere on the skin. Within an hour, the poison in the blood affected the heart, the breathing became distressed, and finally the victim gave way completely and remained unconscious for more than an hour. This was followed by copious vomiting, and extreme weakness which lasted several days.

A slightly stronger contact with the plant must inevtably have been fatal.

### Three Unusual Specimens.

Atlantic City, N. J.

To the Editor:—

I have two most curious natural specimens of rock formation and one of another sort that are "almost unique" as the amateur would say.

The round stone was brought to me from the Sahara Desert from a jagged bit of stratified rock rolled into the desert by the winds and worn by the sands into its present shape. It is rare, perhaps unique.

The "cigar" was found, with others, in the Salton Sea, probably washed down by the Yellowstone. Other specimens were smaller and shorter, but always of the same shape—a cigar.

I have found dozens of the third specimen, but no one seems to know exactly how, by what species of "the lower invertebrata," and why formed. There is always a central nucleus of shell, etc. I guess clams or oysters fix on the solid bit and the wood-like or knot-like layers are made in forming the anchorage. Finally cast adrift, it is worn by waves and sand.

Cordially,

GEO. M. GOULD.

Upon request for further particulars of the stone cigars, Dr. Gould sends us a letter from Professor Ernest Merritt of Cornell University, who writes as follows:

"These curious affairs were found by my nephew, George Merritt, on the Colorado desert in the southeastern part of California. The exact spot where they were found lies a little west of the Salton Sea, probably about ten or fifteen miles from the sea, and in a slightly rolling part of the desert. At this point there is very little vegetation and the soil is chiefly sand.



THE ROUND STONE, "THE CIGAR," AND THE THIRD SPECIMEN.

Strong wind and sand storms are common and in consequence the shape of the ground frequently changes.

"My nephew was on a camping trip with two or three others, and he said that they suddenly ran across a piece of ground, nearly an acre in extent, that was so thickly covered with these stone cigars that they made walking difficult by rolling under one's feet. He brought back a soap box full, that being all that he could well carry on the horse he was riding. The cigars appear in all sizes from little things only two inches long up to a length of two feet, but always have the peculiar cigar shape, sharp at one end and more blunt at the other. They frequently present the appearance of being made in layers and it sometimes looks just as though they had a wrapper like the wrapper of a cigar."

### Explanation of the Specimens.

I have examined with much interest the two stones that you recently sent.

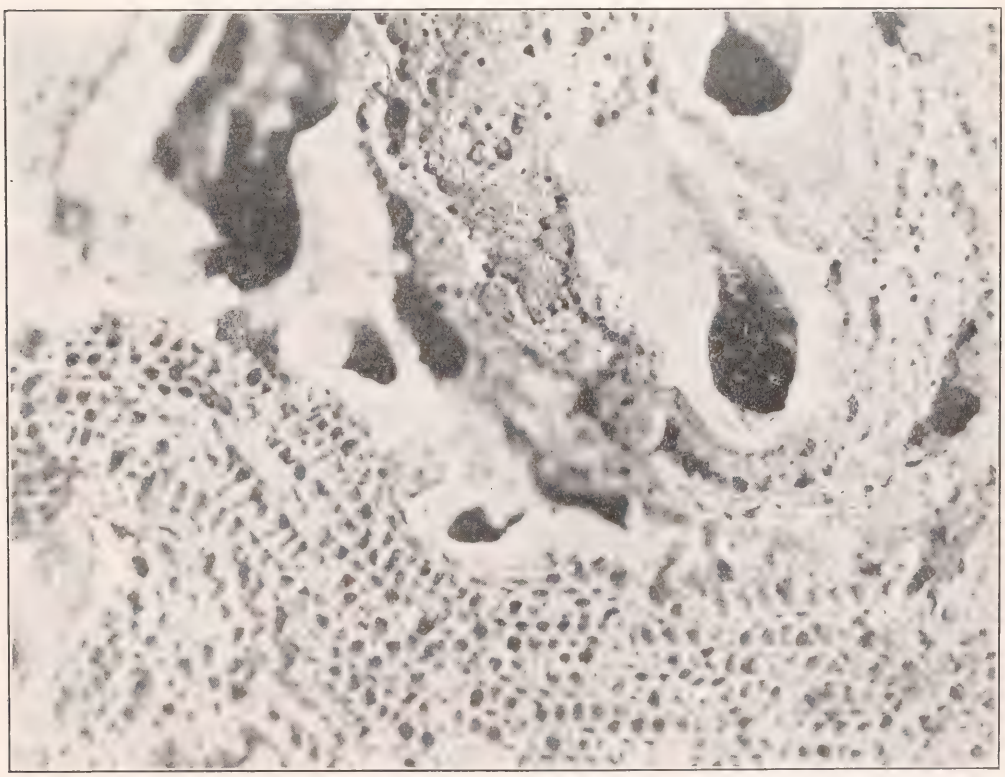
The cigar-shaped one is a fairly common type, although such perfect form is rare. It is a sandstone concretion which has been rolled by moving wa-

ter and pitted by the wind. Such concretions are common in many sandstones. They assume many shapes, and we can no more say why this one is like a cigar while another is spherical than we can say why one crystal has six sides and another five. In desert countries the rocks break up under the influence of heat and cold with a tendency toward prismatic forms. This piece looks as if it had been rolled on the shore of the old expanded Salton Sea, but of course I cannot be sure without knowing the exact elevation. It may simply have been rolled by running water. Since the rolling process was completed it has lain in such a position that the winds have blown bits of sand against it and have worn the little pits with which it is covered, especially at the butt end. I am sorry that I cannot tell just why it is cigar-shaped, but that is beyond the knowledge of any mortal man.

The other stone is to me much more interesting because it is a sample of the work of Neolithic man. Take it in your hand with the two little hollows up and facing away from you. Put your thumb in the larger hollow and your forefinger in the smaller, and grasp the stone as if to throw it. Such throwing stones were in common use among early men. Some ancient hunter picked out the roundest stone he could find in the stream-bed, and then laboriously polished it. The success of his work is seen in the smooth top and bottom. He chipped out holes for his fingers, and used the stone to throw at animals. After he died and the desert became drier than formerly, the stone lay where it was exposed to the cutting action of sand drifted by the wind. The top and bottom escaped without change, but on the sides, where the moving sand grains struck with force, innumerable little pits have been carved and the finger holes have been smoothed. The material looks to me like impure chalcedony or hornstone, but I cannot be sure without chipping into it. —Ellsworth Huntington, Yale University, New Haven, Connecticut.

* * * * *

The specimen that you send is not



A VIEW OF THE THIRD SPECIMEN, AN ENCRUSTING BRYOZOON, UNDER A MICROSCOPE

an unusual one. It consists as you have stated of a mass of serpular tubes, with a bryozoon growing on the outside of them. It is a common thing for the bryozoons to form a crusting material like this over a variety of solid objects, and this bryozoon, having a lime shell, always appears porous in this way after the animals have died. What you have therefore is simply a mass of serpular tubes over which there have been growing a good many generations of a common encrusting bryozoon, and then after the death of the animal the soft part disappearing leaves the porous mass of shells such as you have here. Careful examination of specimens shows a great many layers of these bryozoon shells, indicating that the animals have been growing for a long time, forming layer after layer of crust, one outside of the other.—Professor H. W. Conn, Laboratory, Middletown, Connecticut.

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That one who does not stand so near to any man as to see the divinity in him is truly alone.—Thoreau.



THREE VIEWS OF TEREDO BORINGS.

**The Ship-worm is Clam-like.**

Atlantic City, New Jersey.

To the Editor:—

I send you some particularly fine samples of teredo work found on the shores here. Want to photograph them, and give us a talk on the teredo's work on our old wooden ships, etc.?

Cordially,

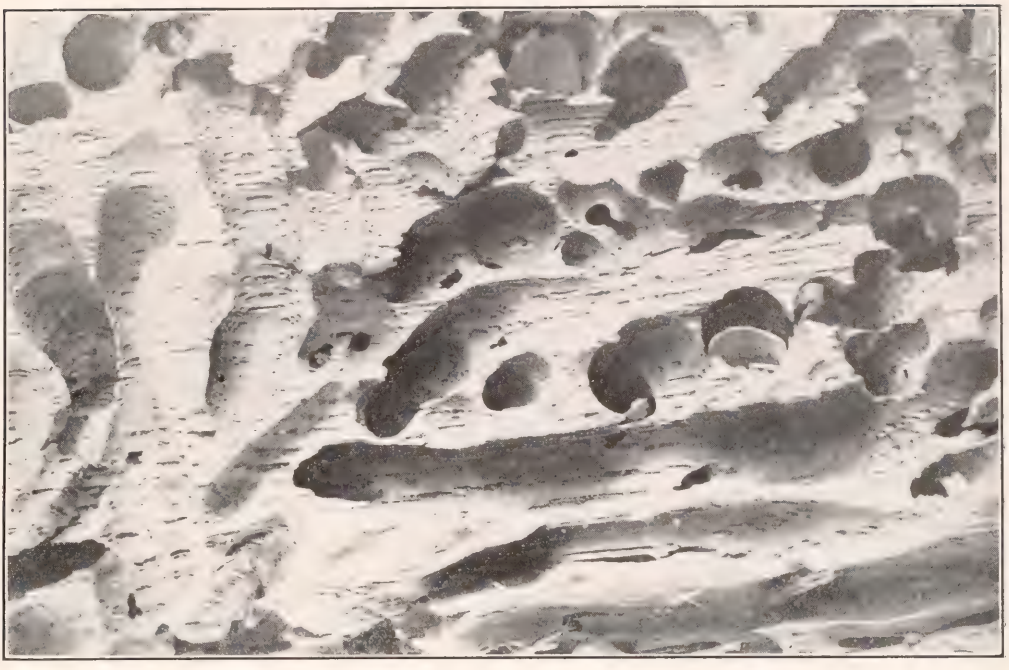
G. M. Gould.

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The best "talk" on the teredo is in Mayers "Sea-shore Life" as follows:

"The ship-worm, or teredo, is not a worm but is closely related to the clams. Its peculiar elongate form and worm-like appearance are due to its habit of burrowing into any sort of wood, excepting palmetto logs or teak. The ship-worm begins to burrow into the wood by movements of its foot and shell, when only as large as a pin's head, so that the opening to the burrow is small. For a short distance from the entrance inward the burrow is apt to be perpendicular to the surface, but it soon turns and runs more or less in the direction of the grain of the wood, although usually quite twisted. The burrow is lined with shelly material secreted by the teredo, and it is interesting to observe that no matter how numerous the teredos infesting a piece of wood, their tubes remain separate one from another and never intersect. The shelly material lining the tube is not the true shell of the teredo. The true shell is found at the head-end of the body which is farthest in from the opening to the burrow. Its two valves are small, white and delicately sculptured. The long, worm-shaped body is yellowish-white and tapers gradually to the posterior end which is near the opening of the burrow. The two long, extensible siphons are found here; and on both sides near their base are a pair of shelly flappers which serve to close the opening of the burrow when the siphons are withdrawn. A thick muscular collar at the base of the flapper also assists in closing the opening.

"The teredo does not eat the wood into which it bores and is, therefore, but little affected by poisoning the timber. The most efficient protection is copper sheating. Species of teredo are



A VIEW OF TEREDO BORINGS UNDER A POCKET MICROSCOPE.

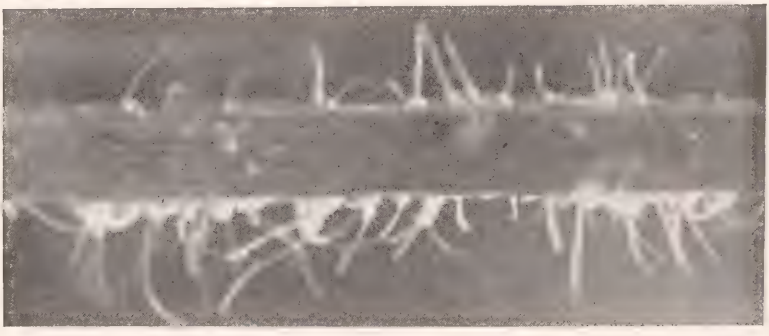
widely distributed and do enormous damage to submerged timber. *Teredo navalis* is abundant along our shores and also on the coasts of Europe, where it has done great damage to the woodwork of the dikes of Holland.

"The eggs develop within the gill cavity of the teredo and are cast out chiefly in May and June as actively swimming ciliated larvae. They then develop a pair of relatively large shells resembling those of a clam, and finally eyes, and a long foot which enables them to crawl over timber into which they soon burrow."

We discover a new world every time we see the earth again, after it has been covered for a season with snow.—Thoreau.

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When I detect a beauty in any of the recesses of nature, I am reminded by the serene and retired spirit in which it requires to be contemplated of the inexpressible privacy of life. How silent and unambitious it is! The beauty there is in mosses will have to be considered from the holiest, quietest nook. —Thoreau.



THE EXTENDED SIPHONS OF THE LIVING TEREDO.
Cut by courtesy of the New York Aquarium.

# THE AGASSIZ ASSOCIATION

Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

### From the Breckinridge Chapter, Louisville, Kentucky.

We received our charter and the copy of "Three Kingdoms" several weeks ago. We have already found the book useful, and have decided to have the charter framed and hung in chapel of the Normal School. We appreciate very much your welcome.

We would appreciate it very much if you would send a sample of the AA pin so that the Chapter can vote on getting it.

We have an indoor meeting of the Chapter on the second Thursday of each month. At this meeting we have a programme relating to our work, attend to our business, and decide on the place and purpose of that month's outing. We do not intend though to limit the jaunts to one a month when it is possible to have more.

We have taken trees as an appropriate study for winter. On our first outing we devoted the trip to discovering what we would like to study further. The Vice-President then made a report of the jaunt to the Normal classes in a body. At the indoor meeting following we had two papers read—"Trees in General" and "Trees in Winter." The aim of the next jaunt was tree recognition and we went to a park where there is the greatest variety of trees in this vicinity and the trees are labelled, so we will know our trees for future work. We will continue the study of trees for the whole year unless the members find something of more immediate importance at a certain time, and in addition to the trees will study the spring flowers when their season comes.

We are very much interested in the work and have found it very pleasant.

CELESTE DEMPF,
Corresponding Secretary.

### Putnam Chapter, Greenwich, Connecticut.

Officers: President, Dorothy Thorp, Vice-President, Marion Look; Recording Secretary, Constance Taylor, Corresponding Secretary, Marion Carson; Treasurer, Janet Warford. Number of members, twelve.

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### Report of the Johnstown (Pennsylvania) Chapter.

Officers: President, Virginia Lewis; Vice-President, Stanley Noffsinger; Treasurer, Magdalene Yoder; Secretary, Ida Weisberg; Reporter, Sanford Cable; Faculty Adviser, Miss Krebs. Number of members, twenty-one.

* * * * *

The year has been a very busy one for the Johnstown Chapter of The Agassiz Association. Last spring we built bird boxes, especially for the wrens. Many of the members succeeded in getting the birds to come to the boxes and build their nests. The Chapter is now building martin boxes. We expect to have these boxes out before spring to be weathered, and expect to be successful in enticing the birds to them.

In the fall we had a number of excursions to study the medicinal weeds. One of the most interesting excursions of the year was a trip up the mountain. When we reached the highest point we were able to look down into the valleys of four different counties.

A new, large aquarium has been placed in the High School building. The members of the Agassiz Chapter are very much interested in the goldfish and aquatic insects. The aquarium is divided into two parts, and the goldfish and aquatic insects are kept separate.

The members of the Chapter are experimenting with the "dwarf trees," but as yet we have had no success.

IDA E. WEISBERG, Secretary.

### The Wykagyl Chapter, New Rochelle, New York.

Officers: May Hoffman; Vice-President, Henriette Hoffman; Recording Secretary, Frances Barker; Corresponding Secretary, Anita Peck; Treasurer, Helen C. Levine. Number of members: sixteen.

### Our Third Louisville (Kentucky) Chapter

Officers: George White, President; Richard Peter, Vice-President; Katherine Schachner, Secretary; Letitia Lawrence, Corresponding Secretary; Thurman Gast, Treasurer; Nellie Starks, Chairman of Library Committee; Nancy Starks, Chairman of Program Committee; Walton Small, Sergeant-at Arms. Number of Members, seventy-four.

The Chapter of The Agassiz Association in The Monsarrat School was organized this week. I am enclosing a list of members and officers. The young people are very enthusiastic about it and are anxious to begin work at once. The day we organized was warm and sunshiny and the odor of growing things was in the air. We expect to have many field trips in the country, but when this is impossible we have our parks that will furnish us with abundant material for our studies. Birds and spring flowers will be our special work for the next two months.

We hope to send you gratifying accounts of our Chapter in the near future.

JENNIE C. BAKEWELL,
Teacher of English,
Monsarrat school.

### The Supreme Agassiz Idea.

The summer school of Agassiz at Penikese had a great influence upon nature-study in the schools and universities and paved the way for the nature-study idea. While the purpose of Agassiz was to study marine life in a truly scientific manner, yet the fact that he took his pupils to the place where the life was growing was revolutionary as an educational idea. Although as a teacher he was devoted to pure science, yet many of his maxims have become the slogans of the nature-study vanguard.—Anna Botsford Comstock in the "Nature-Study Review."

### A Report of Geological Observations.

Winona, Ohio.

To The Agassiz Association:

I hereby submit the following brief report of observations taken during the past year along the lines of local glacial geology.

Northern Columbiana County, Ohio, lies just inside the southern limits of the last great glacier. It is covered with a sheet of drift varying from three to three hundred feet in thickness. This lies in long slopes of hill and valley, gently undulating, with a general drainage to the Great Lakes. Immediately south of the terminal moraines the creeks run in a general southerly direction with rather steep and abrupt slopes and only a very thin covering of residual soil. The drift country is characterized by its numerous large granite boulders, its great variety of sandstones —often containing many valuable fossils, and the frequent occurrence of marshy land. Swamps are almost unknown south of this belt, while igneous, metarmorphic, or a variety of sedimentary rocks are entirely replaced by the coarse red sandstone which underlies most of the southeastern part of the state. This alternates with shale, limestone, and coal, which are usually found only at a considerable depth here. In drilling for oil in the western part of the county, a large pre-glacial valley of uncertain extent has been discovered. It appears to run at a considerable angle to the present drainage slope. It has been estimated to be about three hundred feet in depth. Crossing it lies the present valley of the Mahoning river, which widens out into a large, level, dried-up, glacial lake bottom. This is now occupied by only a small lake at the northeastern end. The region is almost too flat to farm, owing to its resultant poor drainage, but the land is rich and almost totally free from stones of any kind. East of this old lake bed we find several eskers of considerable extent which are valuable for the sand they supply. Farther west, running diagonally through the city of Massilon, is another very large esker which varys from ten to thirty or more feet in height, and supplies an immense amount of material for concrete work. Most of the land in

this part of the county is mixed sand and clay loam, very well fitted for farming. In places it is rather thin, but averages a very desirable depth, with good drainage. In the Mahoning and Big Sandy river valleys, and to some extent in the valley of the Little Beaver, large tracts of land now lie waste, owing to the difficulty of properly draining them and insuring them against flood in spring. As land values rise these tracts will doubtless be brought under cultivation and should yield very good crops.

In some places the drift sheet is very shallow and easily permits one to remove it and see the numerous striae. The country rock here is, I believe, of Carboniferous origin, probably belonging to the Pennsylvania series, as it contains several veins of coal at depths varying from thirty to eighty feet. The Berean sandstone, which outcrops near Cleveland, is here about eight hundred feet below the surface and rapidly slopes to the southeast, becoming nearly three thousand feet deep in parts of West Virginia, I am told. Owing to the inaccuracy of drillers' reports in many cases, I find it hard to tell much about the state of the drift sheet below the surface where it is deep.

There is room for much interesting study and investigation along this line of geology in Columbiana County and I only regret that the necessities of earning a living seem to require quite so nearly all of my time. I have not made any strange or unusual discoveries, but have received a large amount of pleasure from my observations. I have greatly enjoyed the recent issues of THE GUIDE TO NATURE.

Very sincerely,
Wm. J. Blackburn, Jr.

* * * * *

You have given a very good report of your investigations. You tell the facts and in a clear and interesting manner. Other topics might be "A Comparison of the Glaciated and Non-Glaciated Parts of Ohio," "A History of Lake Erie," with special reference to the sand ridges formed along its south shore, and a study of any one of the economic products of the state such as coal, oil, gas, salt, lime, building stone and so on.

### Hunting in the Heavens.

One of the enthusiastic, active Members of The Agassiz Association has made the statement that hunting in the heavens may reveal as many new things as hunting in the marshes. Our readers will recall that not many months ago Mr. John E. Mellish of Cottage Grove, Wisconsin, published an interesting chart of observations made in the marshes, and now comes a letter but a little too late for our March number, regarding his discovery of a comet. He writes February 18th as follows:

"On the morning of February 10th I found a new comet in Ophiuchus Right Ascension seventeen hours and three degrees north. The comet is small and bright and is moving east one-half the moon's diameter a day."

On February 28th he writes:

"The comet is two hundred million miles from us on March 1st, and the same distance from the sun. It reaches its nearest point to the sun on August 2nd, and will then be one hundred and fifty million miles from the sun and one hundred million miles from the earth. It will be nearest the earth about June 1st, the distance then being sixty million miles. The line of nodes is where the comet's orbit crosses the earth's orbit. The comet is now above the earth's orbit and will cross it about May 15th. It will then be below the earth's orbit and will pass from our sight in June, going to the south pole of the heavens. This comet may be visible to the naked eye in May, and in June will be thirty times as bright as it was at the time of discovery on February 10th."

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Report comes from Wiemar, Germany, of the discovery of still another early human fossil. The new find is a well preserved lower jaw with all the teeth in place except two incisors. An especially notable feature is that while the canine teeth are large, as in the apes, and there is no chin as in proper human jaws, nevertheless the wisdom teeth are smaller than the other molars as in modern civilized man. The relic belongs to one of the warm interglacial periods, and is probably among the oldest of all known human remains.

### Helps over Hard Places.

We gratefully acknowledge the following substantial aids and encouragements in the work of The Agassiz Association:

| | |
|---|---|
| Honorable Zenas Crane | $100.00 |
| Mr. Ellis B. Noyes | 2.00 |
| The Johnston Chapter | 1.00 |
| A Friend | 25.00 |
| Mr. Ellis B. Noyes | 1.00 |
| A Friend | 10.00 |
| Honorable Francis O. Winslow | 10.00 |
| Honorable George P. McLean | 5.00 |
| Miss Virginia Butler | 5.00 |
| Mr. William F. Decker | 5.00 |
| Miss Francis H. Errett | 50.00 |
| Mr. Arthur A. Carey | 100.00 |
| Mr. Arthur L. DeGroff | 25.00 |
| Mrs. E. H. Hooker | 10.00 |
| A Friend | 20.00 |
| Mrs. Francis Jenkins Danforth | 5.00 |
| Mr. Ellis B. Noyes | 1.00 |
| Mr. Arthur F. Estabrook | 25.00 |

### Contributed Specimens.

Mr. Harry W. Strock, Dorset, Ohio: potato balls.

Miss Lenore Woodworth, Jefferson, Ohio: potato ball.

Mr. Oscar Hagen, Salt Lake City, Utah: specimens petrified wood, grass and worms, and Mormon nails.

Miss Mary E. Loftus, Jefferson, Ohio: potato balls.

Miss Eleanor Gay, Tunkhannock, Pennsylvania: potato balls.

Mr. E. F. Hammond, Conneaut, Ohio: potato balls.

Mr. J. J. Bruehlman, Dorset, Ohio: potato balls.

Mrs. Chas. F. Jones, Springdale, Connecticut: old-time nature book.

Foss' Market, Stamford, Connecticut: curious banana growth and unusual spider.

Mr. William P. Seal, Delair, New Jersey: aquatic plants.

Professor Edgar T. Wherry, Assistant Curator of Mineralogy, United States National Museum, Washington, D. C.: two specimens petrified wood.

Mr. George V. Nash, New York Botanical Garden, New York City: leaves of *Bryophyllum calicynum*.

Professor Alfred W. Pike, Stamford, Connecticut: "New York Tribune" supplement of eight pages of lectures by Louis Agassiz at Cambridge—not dated but about 1872 or 1873.

Charles H. Crandall, Stamford, Connecticut: large piece of pink quartz.

Miss C. F. Curtiss, South Britain, Connecticut: two specimens of petrified wood.

### An Unusually Interesting Rock List.

Ward's Natural Science Establishment, Rochester, New York, has recently issued an unusually interesting price list of rocks. It is a check list as well as a price list. It will be studied with deep interest by many of our lovers of minerals, since not only the rock but the locality is given. Send for a free copy and mention THE GUIDE TO NATURE.

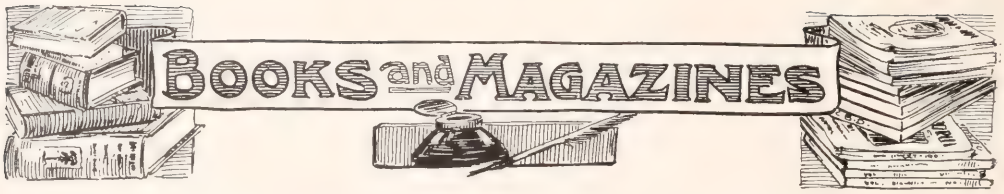
On the death of the oldest son of Charles Darwin, the relics of the great naturalist, the portraits, medals, notebooks, manuscripts, and family papers, have passed into the keeping of another member of the family, C. Galton Darwin.

Low and soft, or insistent, loud.
Nature's voice may e'er be heard
By those who, lone, or in a crowd,
Attune their ear to her spoken word.
—Emma Peirce.

**Please remember this educational uplifting work in making your will.**

## Form of Bequest to the Association

*I hereby give and bequeath to The Agassiz Association, an incorporated association, having its principal executive office at* ARCADIA, *in Sound Beach, in the town of Greenwich, Connecticut, the sum of* ----------*dollars.*




**Transpiration and the Ascent of Sap In Plants.** By Henry H. Dixon, Sc. D., F. R. S., New York City; Macmillian and Company.

Here is a thorough discussion of a long-standing problem. Attempts many and great have been made to solve it. The question has been tossed back and forth like a football between those who assign the ascent of sap to vitality and those who have tried to explain it as purely physical and mechanical. This volume gives a physical explanation of the rise of water in trees. Not every one will agree with the author's conclusions but all readers will admire and enjoy the manner in which he conducts the discussion.

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**The Amateur Garden.** By George W. Cable. New York City: Charles Scribner's Sons.

"That gardening is best____which best ministers to man's felicity with least disturbance of nature's freedom." The quotation is worth making and remembering. It is from the book, and is the epitome of the author's teaching. Mr. Cable's lifelong habit of story telling has evidently influenced him in the writing of this book. "For such a garden is itself a story, one which actually and naturally occurs," he says, "yet occurs under its master's guidance and control and with artistic effect." The story is well told and is worth telling. The book is well illustrated. All cannot have a home as magnificent as some that are here pictured, but all may profitably cultivate a love of plants similar to Mr. Cable's.

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**The Evolution of Sex in Plants.** By John Merle Coulter. Chicago, Illinois: The University of Chicago Press.

To read any book by Professor Coulter is a delight. His work is not only interesting but the reader feels that it is authoritative. In this, his latest book, he brings to bear upon the discussion of the evolution in sex, careful consideration of a sexual reproduction, a thought that is worth careful consideration. He says:

"The significance of sex, therefore, is not to secure reproduction, but to secure something in connection with reproduction that the other methods do not. It is necessary to keep this fact in mind in considering the origin and real functions of sex. Our conceptions of sex have largely been determined by its place in the life histories of the higher animals, in which it has become the only method of reproduction. It is difficult, therefore, to think of it as having any function apart from reproduction; but among plants the sexual method has never become the only method of reproduction."

**The Song of the Fifty Stars.** By Arthur A. Carey. Hillside Waltham, Massachusetts: The Crow's Nest Observatory.

This is a dainty poem published by the author, a Member of The Agassiz Association, for private circulation. It is possible for our astronomical readers to obtain a copy. Mr. Carey is not only an enthusiastic student of "The Grandest of Sciences," but a maker of verses as well. But is not nearly every naturalist more or less of a poet?

---

**Optic Projection.** By Simon Henry Gage Ithaca, New York: Comstock Publishing Company.

Here is the book that every lover of optical projection has long desired. There are available a few special books on the subject but they are for the most part, too limited in scope or else out of date. This book, is as one might suppose, a masterpiece of clear, concise directions and explanations. Professor Gage is well known to our readers as the author of an important handbook of directions for the use of the microscope. His knowledge of optics has been acquired through his genuine love of the art. He has the enthusiasm of an amateur with the skill and training of the professional worker that he is. His purpose in writing this book is as he states, "To explain the underlying principles on which the art depends, and to give such simple and explicit directions that any intelligent person can succeed in all the fields of projection; and our hope is that the book will serve to make more general this graphic art by means of which many persons can be appealed to at the same time and in the most striking manner. Furthermore we believe that this art has great, undeveloped possibilities for giving pleasure, arousing interest and kindling enthusiasm, in that it provides for the rapid demonstration of maps, diagrams and pictures of all kinds, the structure and development of animals and plants, many of the actual phenomena of physics and chemistry and finally scenes from nature and from life even with their natural motions and colors."

The work contains interesting and attractively illustrated chapters on direct currents, alternating currents, house lighting systems, and various kinds of illuminants. It also how to prepare lantern slides, project opaque objects, use the projection microscope, moving apparatus, with hundreds of other topics. They are all well and thoroughly treated. A useful feature is the two-column summary at the end of each chapter. The first column is "Do," the second is "Do Not."

With such explicit directions it seems as if even a novice could not go astray.

# The Guide to Nature



S IT NOT PLEASANT to exercise our minds in the contemplation of the great spectacles of nature? Is it not useful to know, at least, upon what we tread, what place we occupy in the infinite, the nature of the sun whose rays maintain terrestrial life, of the sky which surrounds us, of the numerous stars which in the darkness of night scatter through space their silent light? Far from being a difficult and inaccessible science, astronomy is the science which concerns us most, the one most necessary for our general instruction, and at the same time the one which offers for our study the greatest charms and keeps in reserve the highest enjoyments.

—Flammarion.

To merely look with delight and wonder upon the twin glitterings of the double stars, the gorgeous splendor of the clusters, the pale glow of the nebulae; to scan the wild scenery of the moon; to watch the huge spots drifting across the sun; to follow the satellites of Jupiter as they circle about the giant planet; to marvel at Saturn with his "wondrous rings;" to wait and watch for the startling phenomena of occultations and eclipses; and through all this to see the working of the majestic and glorious laws of the universe—this is not to be set aside as worthless.—Gibson.

Vol. VII
No. 12

May 1915

EDWARD F. BIGELOW
MANAGING EDITOR

Subscriptions, $1.00 a Year. Single Copies, 10 Cents

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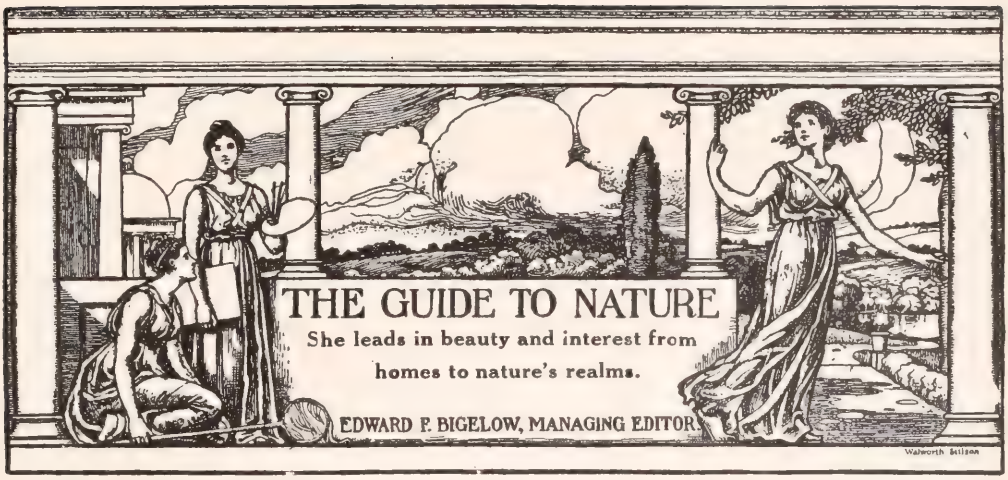
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# GREENWICH NURSERIES

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## LANDSCAPE GARDENERS AND NURSERYMEN

GREENWICH, CONN.




Published monthly by The Agassiz Association, ARCADIA: Sound Beach, Connecticut,
Subscription, $1.00 a year Single copy, 10 cents
Entered as Second-Class Matter June 12, 1909, at Sound Beach Post Office, under Act of March 3, 1897.

Volume VII MAY. Number 12

# Babcock's Walnut.

**By Robert T. Morris, M.D., 616 Madison Avenue, N. Y. (Member Zinnaean Society of Natural History).**

Some years ago there appeared upon the California coast, a peculiar form of walnut. It was assumed to be a cross between the California black walnut and the Coast live oak, and specimens of this form of tree were sold in America and abroad as examples of a remarkable hybrid.

Professor Ernest B. Babcock of the University of California made one report upon this form of walnut in "The Journal of Heredity" for December, 1914. His exhaustive study of the tree may well serve students engaged in research work, as an example of accurate scientific method.

Professor Babcock came to no definite conclusion in relation to the origin of this form of walnut, but he describes it as representing what has been called "aggregate mutation," by other writers.

The study of this new walnut which was named *Juglans Californica var. quercina*, includes investigation of three chief questions:

(1) Origin through hybridization with the Coast live oak, *Quercus agrifolia*, Née.

(2) Origin from teratological flowers and fruits of *Juglans Californica*.

(3) Origin by mutations in apparently normal flowers and fruits of *Juglans Californica*.

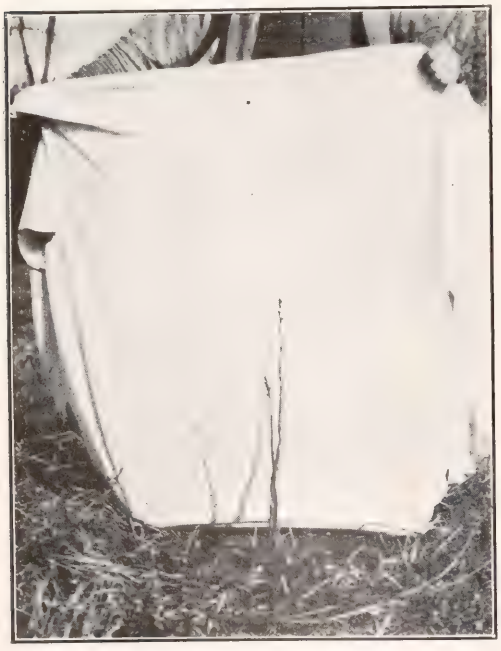
The first question was disposed of so promptly that further comment is unnecessary. It is improbable that we shall ever have crosses between oaks and walnuts unless, at some time in the future, experimenters may succeed in treating the membranes of certain plant cells in some such way as Loeb has worked with sex cells of the starfish and the sea urchin.

Concerning the second question, we may still ask if Babcock's walnut is not a teratological form. From a set of abnormal nuts he obtained a larger number of walnuts of this type than were obtained from any nuts of apparently normal character from those trees which furnish *quercina*.

The third question leaves us asking if the apparently normal flowers and fruits of *J. Californica* were always quite normal. Professor Babcock assumes the possibility of occurence of

some phase of parthenogenesis and states that it would be reasonable to expect marked uniformity in size, leaf characters and season habits among the off-spring.,

In this connection I would like to report briefly upon certain parthenogens which resulted from my attempts at hybridizing across considerable distances. In none of these parthenogens has there been any evidence of reversal to ancestral type as yet. The three photographs which are here presented represent a characteristic disparity in size among parthenogens from one parent The photographs are of three parthenogenetic butternuts *Juglans cinerea*. They were made by subjecting pistillate flowers of the butternut to the influence of pollen from



BUTTERNUT PARTHENOGEN.
Height twenty-two inches.

the bitternut *Carya minima* and represent three seasons' growth under like conditions of cultivation, in a field with uniform character of soil—a shallow gravelly glacial till. The height of these three young trees is approximately 22 inches, 33 inches and 57 inches respectively. They were all photographed with the camera placed at three yards distance. Similar disparity in size has been observed among some of my parthenogenetic chestnuts, hickories and butternuts, with or without male "influence."

When some cell of the ovule of a plant of one genus is stimulated into activity by the pollen from a plant of another genus, I have termed the phenomenon "stereochemic parthenogenesis" temporarily, as a basis for one or more working hypotheses. We assume that each protoplasmic mass retains its fixed molecular identity, but that forces acting over molecular distances excite the protoplasm of an egg into segmentation (without fusion of two opposite sex masses to form a gamete).

What is the nature of the force? Perhaps we may speculate as follows:

The protoplasmic mass in the form of a cell with a cell membrane may respond to influences depending upon the semi-permeability of that cell membrane, and this may relate to osmosis (an expenditure of force) at work upon the cell. Osmosis may depend upon the presence of hygroscopic sugars and organic acids of different characters in pollen tube and egg. Enzymes which are not isomeric may act over greater than molecular distances, and furnish a force for stimulating protoplasm of the egg into activity.

A still more distant speculation, but one worthy of consideration according to the electron theory, includes the idea that enzymic action may liberate force that is electrical in its nature, and we might then have an exchange of ions at the site of a cell membrane (difference in potential). The reason for the assembling of anions upon one side and kations upon the other side of a cell membrane would again depend upon the semi-permeability of that membrane. The protoplasm encompassed by the cell membrane is an electrolitic conductor and might respond to stimulation from forces at the site of a cell membrane, by going into segmentation. Whatever the nature of the stimulation of a given egg cell, the result might be as follows:

The egg goes into segmentation according to diploid system, if fusion occurs between any two cells of the embryo sac. In case of segmentation from cell nuclei without fusion, we would have haploid segmentation. With diploid segmentation the progeny of a "stereochemic parthenogen" would presumably be fertile. If the fruit results from growth of egg or from one of the other embryo sac nuclei without fer-

tilization, we would have haploid growth. If the new sporophyte develops from the fertilized egg in the embryo sac, or adventitiously from sporophytic tissue, we would have the development of a cell containing a double number of chromosomes and we might anticipate uniformity in size and other characteristics among the progeny, with close resemblance to the parent.

In my parthenogenetic butternuts, chestnuts and hickories, however, there has been a notable disparity in size of progeny. A theoretical assumption is that in the course of parthenogenesis nature has lost control over the checks which are commonly placed upon a species, for the purpose of limiting variation, in the interest of maintenance of a mean type.

Nature's checks belong to those mechanistic processes which relate to the chemistry of plant growth. Chemistry has been described as "everything that is going on." This is not only literally true but the "going on" is mechanistically arranged according to equations of the periodic table. Atomic and molecular changes belonging to variation and mutation will presumably be treated mathematically by that physicist of the future who is a specialist in some department of botany. At the present time the nature of checks upon



BUTTERNUT PARTHENOGEN.
Height thirty-three inches.



BUTTERNUT PARTHENOGEN.
Height fifty-seven inches.

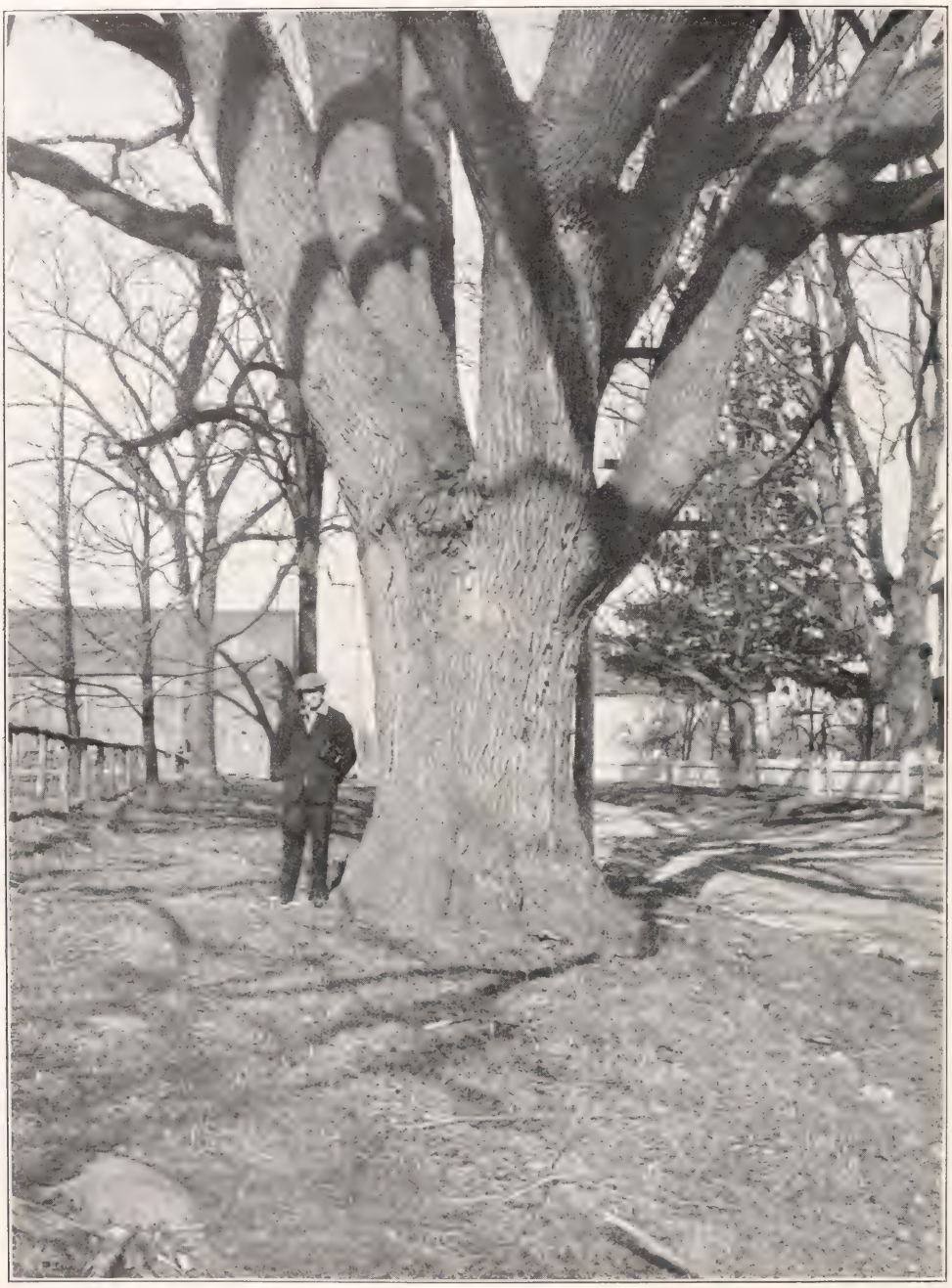
variation cannot be stated scientifically, but from the metaphysical standpoint, we may assume that such checks exist and that they are subject to external impressions made in various ways.

Among the lower plant forms, owing to their simplicity, we would anticipate a uniformity in size of parthenogens, but as we ascend in the scale we must have more and more crosses in order to prevent the numerous characters from becoming accentuated (more effort required on the part of nature for maintaining a durable mean type). Disparity in size of parthenogens among higher plant forms might then be anticipated on that basis.

It will be interesting to observe if the Babcock walnut has developed by haploid system, in which case it will presumably be sterile. If it has occurred from abnormal fusion of two cells of a parent we may still have diploid development and a fertile fruit, the progeny of which might simplify the question relating to the nature of this new walnut.

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Whatever the common eye sees at all and expresses as best it may, he sees uncommonly, and expresses with rare completeness.—Thoreau.



THE BENEDICT ELM.

This elm is in Wilton Township, Fairfield County, Connecticut. The circumference is fourteen feet, eleven and three-quarter inches; and the spread about one hundred and five feet. It was measured and photographed by Norman De W. Betts, January 1, 1915.

## Largest Elm in Connecticut.

BY NORMAN DE W. BETTS.

Local tradition has it that the Benedict Elm in the township of Wilton, Fairfield County, is now the largest elm in the State of Connecticut. The circumference measured on January 1, 1915, at about four and a half feet from the ground, was 14 feet, 11¾ inches. The spread was paced in the direction of the highway which it borders and was estimated to be 105 feet. The trunk, as is shown in the photographs, soon breaks up into a great number of large branches, which in



A FULL VIEW OF THE BENEDICT ELM.

turn form a very symmetrical and imposing crown.

In a state noted for its elms, it would be of interest to know how large these veteran shade trees have grown. It might be wise to put on record the descriptions of some of the grandest among them before insects and fungi have brought them down. Perhaps there are other Connecticut elms that have local traditions; where is the largest specimen of this splendid tree?—"American Forestry."

### Money Value of Seeing Nature.

Here is a problem for you to solve and publish, if you think it will interest any of your readers. The street on which my property is located runs parallel with the Hudson. My neighbor on the opposite side of the street wishes to sell and the purchasers desire me to lease to them the view from their piazza. Should I plant a row of trees along my fence it would obscure the view. The distance is 150 feet, involving about three acres. Land now used for pasture and valued at $500 per acre. What price per year would you charge? I should never interfere with this view unless to build a house, but they do not trust me. H. H. S.

New York.

This is one of the most remarkable propositions we ever had put to us. The general use of flying machines has brought up points of law regarding the use of the air, but the actual value of looking out over a field is surely a new one. We print it to show what a wide range of human life our readers cover and also to see if any such problem has come up before. What would you charge for guaranteeing the right to look across your pasture? Thousands of our readers can look far off across the hills and valleys with no neighbor in sight. It will seem strange to them that people are willing to pay for a lease on scenery!—Rural New Yorker.

Nature speaks in many ways,
Through the nights, and through the days,
And her tones are always clear,
When ears are attuned to hear.

Wind and storm and thunder loud,
Give her challenge to the crowd:
Voice of velvet for the few
Listening e'er for message new.

—Emma Peirce.

# THE MINERAL COLLECTOR

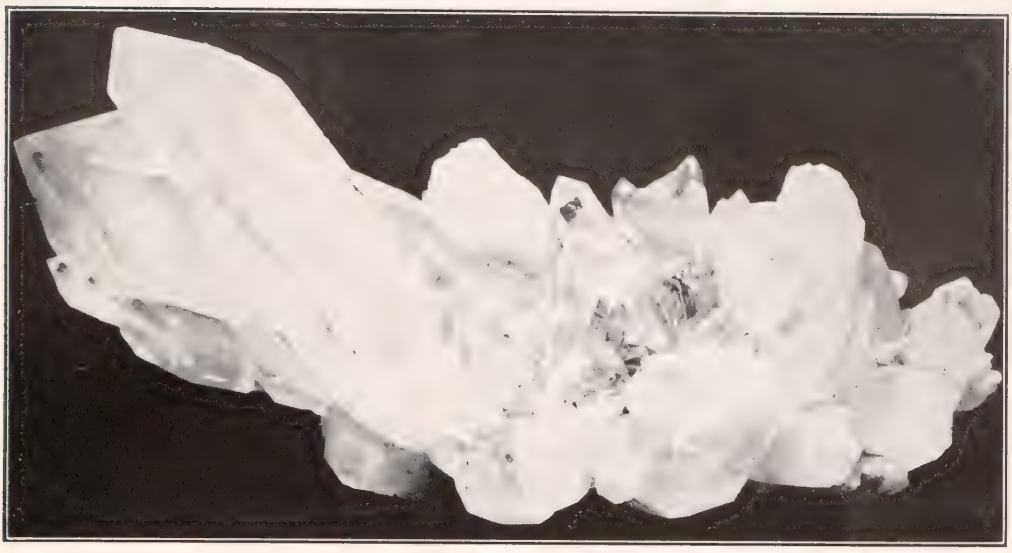
## The Study of Minerals —Why?

BY WILLIAM C. BANKS, STAMFORD, CONN.

That "beauty is its own excuse for being" is a trite saying, but none the less true. The longing for the beautiful is a strong incentive toward the creation thereof not only in deed but in thought. The editor may be wondering if he asked me to write a panegyric on beauty. "Yes, you did, when you asked me to write about minerals." For among all the forms of nature's moulding few others have the beauty of coloring, artistic grouping and adherence to law exemplified in the wonderfully varied yet beautifully simple crystals of minerals. That minerals satisfy our appreciation of the beautiful in nature, is one good reason for their study. At the base of all animate nature is the inanimate mineral kingdom. For that reason we should know something of its members. The soil, the rocks beneath our feet are built up of mineral particles. Take, for example, a bit of marble. See how it glistens in the sunlight. Each reflection is from a little cleavage face of the mineral calcite, and each granule, if not constrained by its fellows, would be a perfect crystal with its own particular bound-



A CROSS SECTION OF STALACTITE SIMILAR TO MEXICAN ONYX.



QUARTZ IS OF WIDE RANGE OF INTERESTS AND BEAUTY

ing planes. Note how a fragment of granite is formed of differing particles. In this case we shall probably find three dissimilar minerals. One that cleaves into thin sheets—mica; another that breaks with bright rectangular faces—feldspar; and another that is harder and without distinct cleavage—quartz. I cite these to direct attention to the varying constituents of the rocks, and to suggest the desirability of making their acquaintance. These minerals are the commonest of all, yet two of them, in their best estate, possess surpassing beauty. Take the mineral quartz. Consider the colors and markings of the agate, the carnelian, the amethyst, the rock crystal and other varieties; these are all quartz; likewise calcite, in many respects even more beautiful than quartz. We love the beauty of flowers, and these are flowers made permanent. Quartz and calcite, are but two species among many equally pleasing and worthy of study. Another good reason for the study is that among the minerals are found all those from which our useful metals are derived. These are literally the foundation of modern material civilization. On them rests the engineer's and the metallurgist's art and skill. Surely these merit our attention. There are other good reasons for studying minerals and their crystal forms. It tends toward discriminating accuracy in observation, as regards color and form, and furnishes one more reason for going abroad under the open sky to study the handiwork of God.

### Recreation.

What so alluring as woodland path,
Unless a stroll by the sea?
A mountain climb is a rare delight,
Or a dip in that same blue sea.

A camp in the woods in autumn days,
When the leaves are gold and red:
A canoe on the lake, a fishing line,
At night, a balsam bed.

These are a few of the pure delights
Vouchsafed to jaded men,
When the season comes, and evoke the wish
That summer were here again.

—Emma Peirce.



PYRITES OR "FOOL'S GOLD."




## A Remarkable Demonstration in the Handling of Bees.

BY EDWARD F. BIGELOW. REPRINTED FROM "GLEANINGS IN BEE CULTURE," MEDINA, OHIO.

For several years I have been making demonstrations in various parts of the country in the handling of bees without needing gloves, smoke, or other protective device. I have at last achieved the climax in such demonstrations. I do not know what more can be done. I regret that I have no photograph to show the demonstration. I would have engaged a photographer if I had known that it was going to be so remarkable.

In the early part of September, I was instructor at the teachers' institute in Tell City, Indiana. In the course of my work I lectured on honeybees, and obtained a colony that a local beekeeper placed on the grounds near the schoolhouse. This was a fairly strong colony, though it had not been in the hive very long, having been taken as a swarm only three weeks previously. I made the usual demonstration after massing the teachers around the hive, opening it and requesting a few to hold frames and to study the movements of the bees. This was done in the forenoon. At noon intermission a few teachers requested me to repeat it, and to show them the frames, bees, eggs, and larvae. I told them that the colony was gentle, and (with care) could be safely handled. But some who had known bees at home said that I had hypnotized those bees, or done something else to them, because I had shown a few of the teachers how to take them in their bare hands. They said that no one else could do that.

In the afternoon a large number of visitors were present at the regular session, and at the recess the same question was brought up, the teachers and the visitors requesting information about my method of hypnotizing those bees. What was the secret? I made this announcement: "After our regular afternoon session I will make the most remarkable demonstration ever made in this country. I will act by proxy, so that you cannot say that I do any thing to the bees, or that I have any peculiar influence over them." From the visitors present I selected a small boy and a girl neither of whom had had any experience with honeybees. I selected four, tall young men, and requested them to remove their coats and roll the shirtsleeves to their shoulders. I asked for eight volunteers from among the young ladies who had low-necked dresses and bare arms. The ladies were requested to push their sleeves to their shoulders. I directed the entire company to go on the campus and arrange themselves in a circle around the hive. I should say that there were 350 people present. I stood back in the crowd and had the eight women arranged in a row near the hive and the four young men in front of them. I sent the little boy and the little girl to the hive to remove the cover and pass the frames to the young men, who were to search for the queen and to give that frame to me. I returned it to the hive. The other nine frames were divided among the four young men, most of them holding two, one holding three. They held these frames above the young ladies' heads, and at a signal of one, two, three, they shook the entire contents of that hive over the eight young ladies. I confess that my heart was in my mouth when I gave that signal. I thought at the very best that there was no great thing to be gained, and there would be a

lot to lose if those young women were stung. I thought I should probably be carried home in the ambulance after the mob got done with me. But to my surprise, as well as to that of the spectators, although those young women were covered with honeybees, not one was stung. The air was black with flying bees. At first it seemed as if the entire colony would go off. The owner became alarmed, but I could assure him because I had the queen. I was confident that the bees would return to the hive. Bees covered the ground and the people. Gradually, however, they began to center toward the entrance of the hive, and the entire hive was coated with bees. The people took them up by the handfuls and did almost everything conceivable with them.

I know of nothing left for me to do that is more daring and courageous than that, and of nothing to demonstrate more convincingly that bees, if properly handled, are not disposed to sting. If you know of any one else who has dared to shake eighty thousand honeybees over bare necks and bare arms until they look as if they have been peppered, I should like to know who did it. If you know of any "stunt," as the boys would say, that could excel that as a public demonstration, please tell me what it is, and I may at some time raise enough courage to try it. The people at Tell City took the whole demonstration as a matter of fact, as if I were going from place to place and doing the same thing every week. You will agree with me that it was decidedly out of the ordinary. It will take me some time to accumulate courage enough to do it again. Perhaps I shall never make another such venture. I have frequently had people put their hands into a mass of bees, or take them up by the handful, and I have seen other demonstrators do similar things; but never before have I seen eight young women covered with bees, and the remarkable demonstration made by totally inexperienced persons. The prerequisite condition upon which I insisted was that the fourteen volunteers must be those who had never handled bees, and from homes where bees are not kept.

ARCADIA, Sound Beach, Ct.

### A Breastplate of Bees.

Here is a novel chest protector that in the estimation of many would be more "hot" than agreeable. Mr. L. N. Gravely of Ringgold, Virginia, had a swarm of bees almost entirely covering his breast. They were beginning to work up toward his face when the photograph was taken. Such handling



"A CHEST PROTECTOR."

of honeybees is and is not dangerous. It all depends upon the way in which it is done. Here were more than enough bees to sting a horse to death in five minutes; comparatively few would be needed to sting a man to death, yet bees, like some other dangerous things, may be easily handled if not done in a wrong way. The secret is to be perfectly calm and gentle and not to fight the bees. The reason why most people are stung is because they think stinging, and bees are in perfect agreement, but when one thinks kindness and gentleness the bees will respond kindly and gently. But this is not a universal rule. Any one that takes off the cover of a hive, and thinks all sorts of gentle and beautiful

thoughts may, if inexperienced, be badly stung; even an experienced beekeeper with the kindest of thoughts might have a similar experience, but the chances are in favor of the experienced beekeeper's immunity, if he is kind and gentle in handling the bees. It can hardly be said of bees that they are treacherous, at one time responding to gentle treatment and not at another. It may rather be said that bees are moodish. Sometimes the most experienced beekeeper cannot handle them without putting on gloves or veil and at times they may be taken up in handfuls and tossed in the air even by an inexperienced child. The skill in handling bees is therefore not a matter of temperament, of kindly treatment nor of rough handling, but rather of knowing when and under what conditions gentleness may be expected from gentleness.

It must be admitted, however, that even if one is experienced and if the bees are in a gentle mood, it does take considerable nerve and self-control to let the bees crawl up near one's neck and chin as these bees are doing.

We are indebted to the "American Bee Journal" for this interesting illustration.

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Recent studies of autumn foliage seem to show that although the brightly colored leaf has passed along much of its nutritive material to other organs. it is itself still living, even after it falls from the tree.

---

Dr. Jacques Loeb, now of the Rockefeller Institute. announces in *Science* for January 29, the results of some very careful experiments in feeding the banana fly (*Drosophila*). He succeeded in raising large numbers of these flies from eggs to maturity with no protein food. Grape or cane sugar, one or two amino-acids, an ammonium salt such as the tartrate, and certain other inorganic salts proved to be ample diet for the insects, although as is well-known, any mammal would promptly starve on such provender. Apparently, then, the fruit flies are, in their food requirements, intermediate between the plants and the higher animals, and about on the level of the bacteria.

**Motion Pictures of a Singing Katydid.**

Mr. Raymond L. Ditmars has succeeded in taking pictures of the katydid in the act of singing. In an article in "The American Museum Journal," he says:

"To photograph the katydid singing was a difficult task. This insect sings by scraping the wings together and only at night. A light of any kind will stop it. Yet to photograph a singing specimen at night meant that a stream of powerful electric light must be turned upon the songster. The deed was done in a grove of young oaks close to the studio. Several dozen katydids were placed in the trees and the camera—on a high tripod—focused on the vegetation of a tree in the center of the grove. The instrument, with special long focus lens was to record the movement of a single insect that watched all proceedings, but remained silent owing to our close arrangements with the machines. The camera was then belted to a small motor so that no operator would stand by the instrument to disturb the insect. A searchlight, such as is used in the navy was then trained on the single tree in which reposed the actor, its powerful rays making photography possible. With the remainder of the grove in darkness the decoy katydids sang vigorously. In the intense beam of violet light the principal in this educational drama was seen turning slowly. Was it irritated by the light, and would it crawl from the lines of focus? This would mean much labor in moving the heavy apparatus in what seemed a fruitless and costly experiment. But its uneasiness was caused by the saucy taunts of the decoys. Its wings were elevated slightly. It could not resist answering some of those rasping calls. The man behind the searchlight could be seen glistening with the perspiration as he 'fed' the carbons of the great arc light. The writer's fingers were upon the switch of the camera motor. Then the insect's wings began to move rhythmically and another chant was added to the chorus of 'katydid, katydidn't,' and so it continued until the picture was taken. And this picture has been seen by thousands of school children who never knew how insects 'sing.'"



THE COMMON ROUND-WINGED KATYDID.

Some recent ingenious and painstaking work in motion pictures has brought to our eyes the mysterious activities of insects in a way we should never have thought possible.

The katydid "sings" by rubbing together the overlapping glassy parts of the wings just back of the head.

Cut by courtesy of "The American Museum Journal," New York City.

# THE STARRY HEAVENS IN MAY

By Professor Eric Doolittle of the University of Pennsylvania.

THE watcher of the heavens has observed how, for some weeks past, the evening skies have been steadily taking on their summer aspect. Slowly the bright winter groups have been withdrawing in the west; the Great Dipper has swung to its highest position in the heavens, Bootes, Corona and Hercules are steadily mounting toward the zenith, the beautiful early summer star, Spica, has almost reached the meridian in the south, while Vega, the most brilliant summer star of all, is already high above the ground in the northeast. It is this constant transformation of the beautiful scene spread out above us that adds so greatly to the variety and pleasure of celestial observations.

## The Most Striking Summer Group of Stars.

Low in the southeast there is now entering the evening sky a beautiful figure which is the most striking and interesting of all our summer groups. This is the great Scorpion, the slayer of Orion, who for this deed was exalted in the skies and there occupies such a position that always while he enters the heavens

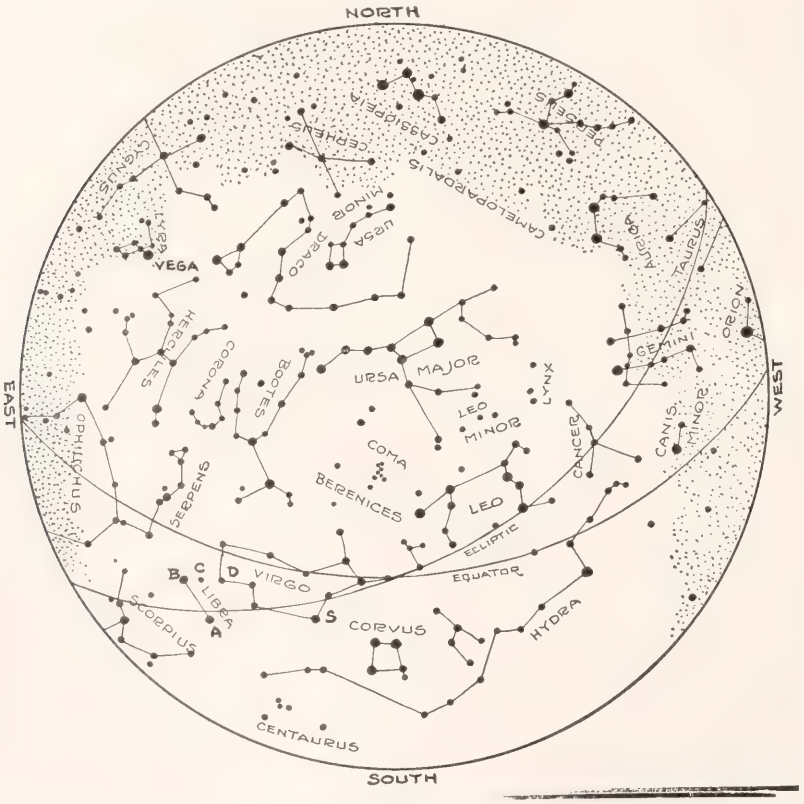



Figure 1. The Constellations at 9 P. M., May 1. (If facing south hold the map upright. If facing west hold West below. If facing east hold East below. If facing north hold map inverted).

the Hunter sinks below the ground as if still in fear. The three bright stars which cross the body of the Scorpion bear indeed some resemblance to the Belt of Orion and are sometimes mistaken by very inexperienced observers for this latter figure. Possibly it is the relative positions of these two striking groups which first suggested the legend of Orion fleeing from his slayer.

For many centuries the Scorpion was an even more beautiful group, for it included the bright stars at A and B, Figure 1, which were later formed into the new constellation of the Balances. This part of Scorpio was dedicated to Venus while the eastern region was the House of Mars—to the astrologers an accursed constellation, the source of wars and plagues. This too is probably the "Chambers of the South," referred to in the book of Job.

The southern claw at A, Figure 1, is this sun was the brightest star of the whole constellation while now it is not one-sixth part as bright as the beautiful

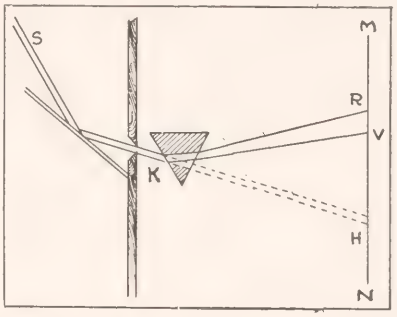



Figure 2. The formation of a spectrum.

Antares near-by, but whether one of these stars has since been steadily growing brighter or the other fainter we do not know. Neither at present shows signs of variability.

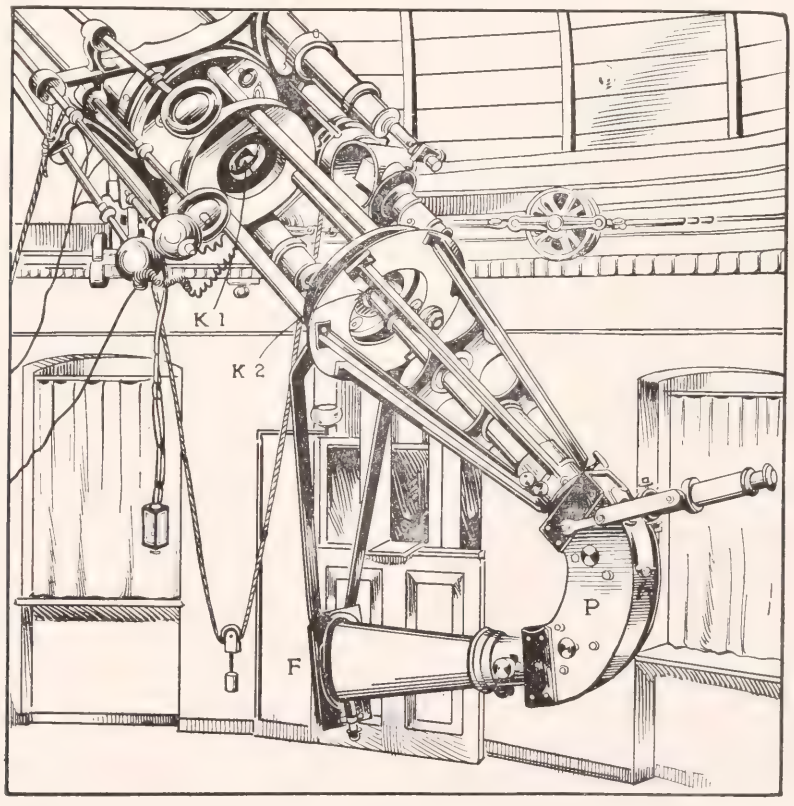



Figure 3. The spectroscope of the observatory at Potsdam.

easily seen to be a wide double star, even with a very small telescope, while the star at B is very remarkable for having a distinctly greenish color, a very rare tint among stars. Twenty centuries ago

At the point C, nearly midway between B and D, there is a rather faint star which, like the well-known Demon Star, Algol, is periodically eclipsed by a dark companion which revolves about

this sun and at intervals of two days and eight hours partially hides it from our view. The maximum darkening will occur this month on the 11th and on the 18th at midnight and on the 25th at about eleven hours and forty minutes P. M.

In spite of its peculiar color, the star

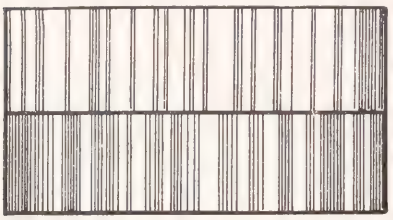


Figure 4. Spectrum of a new star and of the sun.

at B is known to be in very much the same condition as the bluish Vega and Spica and the great Sirius; it is a star of the so-called Sirian type in which the lines of hydrogen are extraordinarily conspicuous in the spectrum. Nearly half of all the stars belong to this great class, the supposedly older and more condensed stars which resemble our sun, are but little less numerous, while the conspicuously different sun—those of a deep red color, the carbon stars, the very old ones, etc.—comprise altogether scarcely more than one-eighth of the total number to be seen in the sky.

The star at B is also known to be approaching us with a speed of six miles a second.

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## How We Find What the Stars Are Made of.

Over a few years ago it would have been thought quite impossible that men could ever analyze the far distant stars and nebulas and many other heavenly bodies; indeed, one of the greatest of the philosophers referred to this as one of the things which from its very nature would remain forever unknown to us. Yet the explanation of how we have achieved this most remarkable knowledge is a very simple one. It has all come through the discovery of the spectroscope, an instrument of so much importance that it has given birth to an entire new province of astronomy. It has divided the whole science into two parts —the older, or fundamental astronomy, and the so-called astro-physics. Many great observatories are wholly devoted to either the first or to the second of these lines of investigation.

It is known to everyone that if light is passed through a prism, as in Figure 2, it will be bent out of its course, so that were a screen placed at MN the beam of light would not fall on this screen at H, but at the higher position RV. And at RV we would see the color strip, or spectrum of colors, merging from red at its upper end to violet below.

If the light, S, came from a brightly shining, vaporized body and the slit K was made very narrow, then the color strip RV would be seen to be crossed by many bright lines, and the position of these lines would depend entirely on the nature of the bright substance which was emitting the light. Thus were the bright substance, iron, so intensely heated that it had become a gas, we would see thousands of lines crossing the color strip, each one caused by iron-light, and each one in a perfectly definite place in the strip; no other substance could produce lines in the same positions as the iron lines.

The usual arrangement is as shown in Figure 3. All light gathered by the large lens of the telescope passes out of the smaller end, K1, and falls on the slit which is at K2. The portion of the light which passes through the very narrow slit then enters the train of prisms, P, the spectrum finally falling on the photographic plate at F.

The upper color strip of Figure 4 is from a bright star in Auriga, while the lower is a part of the spectrum of our sun. A mere glance shows that these two bodies must be of a very different constitution. In the latter we find the lines of iron, carbon, silicon, hydrogen, etc., in fact nearly all of the elements of which our earth is composed. In this way a new element, helium, was discovered on the sun twenty-seven years before it was actually found on the earth.

It is one of the most striking revelations of spectroscopy that the infinite variety of the heavenly bodies is composed of the same limited number of elements as make up our own earth. A uniformity of substance thus extends throughout our whole visible universe.

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I am like a feather floating in the atmosphere. On every side is depth unfathomable.—Thoreau.

### How We Find How Fast the Stars Are Moving.

When a star is moving toward us all the lines of the color strip are displaced toward its violet end; if the star is moving away from us all of its lines are displaced slightly toward the red. And the faster the star is moving the greater this displacement will be, in fact, by carefully measuring it we can tell very exactly how rapidly the heavenly body is either approaching or receding from us.

Thus, Spica, for example, now our conspicuous south star, at S, Figure 1, is found to be approaching us on the whole at the rate of nine and one-fifth miles each second. But in this case a careful watching of the spectrum lines would show us that this bright star has a very complicated motion beside its general motion toward us. Sometimes the lines would be seen strongly displaced toward the red and sometimes toward the violet, and in short, we would soon discover from their behavior that Spica is revolving about a dark and invisible companion. Its orbit is three millions of miles in radius and the speed of Spica in its orbit is no less than fifty-six miles a second so that it completes one revolution in about four days. It is this orbital motion which causes it to alternately approach and recede from us and so displaces the lines of its spectrum in what seems at first so irregular a manner.

### The Planets in May.

Mercury enters the evening sky on May 1st and reaches its greatest distance east of the sun on May 31st. On the latter date it will set in the northwest one hour and forty minutes after sunset. On the evening of May 30th, Mercury and Saturn may be seen near together in the sky, the former planet passing to the east of the latter on the forenoon of the next day. At this time Mercury will be north of Saturn at a distance from it equal to five times the apparent diameter of the full moon.

Venus, Mars, Jupiter and Uranus are all morning stars. The first is rapidly approaching the sun, rising but one hour and eighteen minutes before sunrise on May 1st and steadily decreasing this interval during the month. The last three planets are withdrawing from the sun and thus coming into more favorable positions. On May 1st, Mars rises one hour and twelve minutes before sunrise, Jupiter two hours before sunrise and Uranus at a little before 2 A. M.

Saturn will steadily sink in the evening sky during the month. Although it does not set until ten hours and thirty minutes P. M. on May 1st its westward motion causes it to become nearly lost in the sun's rays by May 31st. As before noted, it will have drawn so near the sun that on the latter date it will pass Mercury and can then only be seen low in the northwest for one hour and forty minutes after sunset.

### The New Comet: A Correction.

The early bulletins regarding this body stated that it drew nearest the sun in August; no year was mentioned. In our last month's article it was assumed that it was the past August which was referred to; it now appears that the least distance will be reached during the next August. (The diagram of the former article is correct but the position of the comet in its path is in error).

Consequently this body is now approaching us and will, in fact, be nearest the earth in June, when it will appear one hundred and sixty-five times as bright as at the time of discovery. It may thus become a conspicuous naked eye object, but very unfortunately it will then be so far below the celestial equator that it cannot be seen from northern latitudes.

### The Amateur in Astronomy.

BY W. F. DENNING, F. R. A. S.

It has been recently hinted that in view of modern developments the amateur is practically out of the field—or soon will be—in astronomical work and investigations. Present-day requirements are such that large instruments, elaborate apparatus, and refined researches, with perhaps spectroscopic and photographic agenda, are absolutely needed; and often enough, the necessary studies are most laborious, requiring close application over a long period, and including critical mathematical analysis. These and other reasons may be suggested for the opinion that the amateur is losing ground, and will not take the prominent part he has done in the past in aiding the progress of astronomy.

Judging, however, from the facts and the teaching of recent years, such an

opinion seems quite inconsistent with the real condition of things. There is no doubt whatever that amateur work will always be pretty much to the fore, and possibly rank in value with that of the best professional talent.

The field is wide enough for each to distinguish himself, the harvest of objects so extensive that every kind of student may reap a share. Much the same array of circumstances will continue as obtained a century ago—the professional and the amateur will work with increasing numbers and energy towards the goal of a more complete knowledge.

It must be remembered that many of our professional astronomers were amateurs at first, and showed such ability and proficiency that they were invited into the professional ranks. As examples of this, there are Barnard, Burnham, and many others in America.

If the history of astronomy be consulted, the names of distinguished amateurs will be found in every succeeding generation, who have effected valuable work in astronomy. It is remarkable that they have achieved so much, considering the obstacles often impeding them, such as want of time, lack of means, and suitable training. There are greater numbers of the ordinary population than is generally supposed who occupy themselves in astronomy as a hobby, and those few among them who love the science sufficiently to pursue it in spite of the difficulties confronting them, and are impelled onward by success, usually comprise men of real ability and aptitude for the work. They have naturally risen above the rank and file, and represent "the survival of the fittest."

The amateur can do good work in nearly every department, but there are some which apparently suit his capabilities and inclinations in a special degree. These I need not mention, as they are sufficiently obvious to everyone acquainted with the subject. To amateurs of means of course there is hardly any limit to the extent of the valuable services they may render the science.—"Knowledge."

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What friend is so lavish as she at our door?
She ever holds out to us more, and still more:
But though open-handed, the best of it all
Is the nature of riches that never can pall.
—Emma Peirce.

### Some Good Suggestions.

It is one of the very pleasant things about astronomy that each instrument has its own field and that the building of a great observatory by no means lessens the opportunity to do good work at the same time with a small instrument. Even much may be done without any instrument at all—all that is needed is a pair of eyes and devoted work. For example, the workers in a large observatory would not close their building and go out to watch the paths of meteors and shooting stars hour after hour, as these litte bodies continually appear on the sky. They would leave this interesting work for one who had no telescopes. And even these observations systematically pursued have a high value. From them we now know that there are hundreds of streams going about the sun, into which our earth plunges at the same dates each year. Another naked eye subject for study is the Zodiacal Light: much is yet to be learned of this, for its fluctuations of brightness are as yet wholly unexplained.

In short there is work for everyone. That that of amateurs holds its place is evident from the numerous accounts of amateur discoveries and work that are to be found each month in our astronomical journals.—Prof. Eric Doolittle.

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## Are Southern Skies Really More Brilliant Than Those of the North?

BY STAFFORD C. EDWARDS, WEST BRIGHTON, NEW YORK.

I desire to submit to any one having personal knowledge of the subject a question of astronomical interest. Recollections from the lecture room while pursuing the subject in college, bring to mind the statement often heard that the stars visible in the southern hemisphere far eclipse in brightness those of the north. Some textbooks speak of the particularly brilliant constellations of the southern skies. Various writers and lecturers make use of the expression, "the beautiful Southern Cross," surpassing in brilliancy anything seen in the northern skies. Last year I sailed from Panama south on the Pacific to lower Peru, making the return trip about five months later. Having given some attention to elementary as-

tronomy in high school teaching, I have observed somewhat the more prominent constellations of the north. On the trip southward and northward the thought kept recurring to my mind, "Why the statement so often read and heard concerning the brilliancy of the southern skies?"

Facilities for observation seemed to be all that could be desired. The nights were clear, sea was smooth and nearby lights did not dim the view; yet to my mind the southern skies lacked much in brilliancy in comparison with the stars of the north. Some of the officers of the ship I found to be men of considerable education. Those with whom I talked on the subject expressed the opinion that the claims for surpassing brilliancy of southern skies were somewhat imaginary.

I concluded that many of the writers and speakers on the subject had never seen southern skies and that possibly some that had observed the stars from seas south of the equator, had never given the subject any attention while at home in the northern hemisphere. Most people living in our modern city never see the stars. During the evenings on shipboard there is not much else to look at. Possibly some writers bubbling over with brilliancy of the southern stars, received the first and only impressions while traveling in southern climes. A lady who had recently made a trip to California strenuously defended the preeminence of the wild flora of that state. I asked if she really thought that the wild flowers in California were superior in any way to those of New York state. She said that she had never looked at them much here. If any of the readers have personal knowledge of the appearance of the skies south of the equator, an expression of honest opinion would be of much interest.

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(Answer by Prof. Doolittle.)

"The truth of the matter is that there is actually but little difference between the brightnesses of the stars actually to be seen in the two hemispheres. Our bright Orion, Scorpio, Canis Major, etc.,—those groups which lie along the equator—are visible from either hemisphere, but it is to be noticed that as Sirius, for example, is below the *celestial* equator, it will be higher in the sky as seen from below the earth's equator.

Most of our bright northern groups are also to be seen from the south. Thus Leo, Taurus, Gemini, Aquila, etc., etc., in fact all not too near the Pole, are seen from both. Astronomically a star below the equator of the sky is called a southern star though it may shine out brightly in our northern skies for many months of the year.

What would actually happen is this. Were you to go from forty degrees north latitude on the earth to the same distance south, you would lose sight of the bright northern groups, Cassiopeia, Ursa Major, and Cyngus, and also of part or all of the faint groups, Draco, Perseus, Cepheus, etc. In place of these you would see Crux, Triangulum, Ara, and the brighter stars of Argo, Eridanus, and other faint constellations never seen in the north. All of the great mass of bright groups which were not nearer the poles than forty degrees would be visible from both places.

The exchange would, in fact, be a very nearly even one.

PROF. ERIC DOOLITTLE.

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### One of the Sights of the South!

Highbrow Guest (on porch of southern hotel in evening)—Yonder is Saturn.

Lowbrow Guest—Point it out to me. Not that I care a rap, only just so I can tell the fellows back North that I saw it.—Ex.

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### She Was Puzzled to Classify It.

A teacher in one of the private schools in Larchmont tells of a lady who is much interested in the study of nature and who takes her children to walk in forest and field and brings in many specimens. She is also a careful housekeeper and insists that everything in the home shall be kept in perfect order and neatness. This state of affairs puzzles some of the servants because the specimens brought in at times seem to be objectionable litter that the household workers are at a loss to classify. Recently a maid rushed to her mistress and in excited tones said: "Please, ma'am, there is a worm crawling up the piano. Is it a worm or is it a natural history?" meaning by this, "Is it to be let alone or shall I throw it out?"

# The Nature Photographers

## Photographs That Express Thought

From a remarkable set of photographs sent to this office by Mr. Harry Whittier Frees of Oaks, Pennsylvania, a selection of six is here shown. These are of interest not only to photographers but to all lovers of cats and dogs. One hardly knows which to admire the most, the pleasing expressions of the actors or the skill of the photographer. To a letter of inquiry Mr. Frees writes as follows:

"I do not train my animals. They are all photographed when young; the pictures are obtainable only through kindness and patience. I have made a study of animal nature for ten years or more and have developed somewhat of an intuitive sense as to when to press the button. I use no special lens or appliances. A studio with plenty of light is required."

"Such pictures are about one-third photography and two-thirds ability to conceive and plan. If you are not able to devise the different 'stunts,' your pictures will be practically worthless, no matter how well you are able to photograph the animals."

To photographers, these are words of wisdom. "About one-third photography and two-thirds ability to conceive and plan." There is wisdom, not only in posing but in photographing. Every camerist should combine skill and imagination with his camera. For twenty-five years I have been receiving photographs from artists in all parts of the world in which the greatest lack as a whole is not a lack of definition nor of the right kind of paper but of ideas. Pictures of nature may be made anywhere by pointing the camera toward the four points of the compass and securing four photographs. This may be continued with the changing of Nature's dress during the year and a large number of photographs obtained, but the trouble would be that not one of them, in ordinary circumstances, would express any special idea. Nature photographers should use their camera to *express thought,* as they use a pen. Sup-



ANXIETY AND PLACIDITY.



DILIGENCE.

pose, for example, that I write these words: "Stone wall, tree, shrubbery, sunshine." Not much of an idea is expressed but when I say, "The warm sunshine is starting the buds on the shrubs by the stone wall under the tree," at once a mental picture appears. Any one may see this in the main, though perhaps not



PATIENCE.




INTELLIGENCE.

an exact duplicate of what I see as I look out of the window. So any photographer may photograph a cat or a dog lying on a doorstep, but what will the picture mean? Nothing. It suggests no thought. But each of these six photographs by Mr. Frees brings an idea clearly and distinctly to mind. They are vastly more than mere pictures of household pets. They make us think and of something worth while. It may be said that in a way they are unnatural because they do



ACCUMULATION.

not show the cat or the dog in an action natural to cat or dog. Nature means nothing to any one until that person sees himself throughout the realms of nature. Therein is just the trouble why more people do not appreciate nature. They look upon it as something apart from themselves. The moment one can see nature with spiritual uplift, see in it improvement of mind and heart, there is the art of making nature real and valuable.

A photograph of a cat or a dog on a doorstep will excite no exhilarating thought in any one except perhaps in the owner of the pet, who may have an affection for the animal. It will connote no such feeling in the breast of any one else. It says nothing. It means nothing. It is only a strange cat on a strange doorstep. It is not my cat. It is not the step before my door. It is nothing but ink and paper. It may mean something to the photographer. But a picture that is replete with suggestions and pleasing recollections to him may be absolutely meaningless to every one else. Your cat or your dog is not loved by everybody in the world or even in your town, yet you send a picture of your pet to a magazine and wonder why the editor is not enraptured, and why he is so calm when he looks at the picture that means so much to you. The explanation is that you have put no story in your work. It contains no human interest. If you had been seated at the dinner table, and the cat were standing with one paw on your knee, while she looked in your face with her head thrown back, and a paw held up toward you, and you looked down toward her with your napkin in your hand, then, maybe—but you have given us only a cat on a stone. You photograph a road near your home or near a schoolhouse where you were a pupil years ago and that photograph seems to you the most marvelous picture in all the world because it is full of yourself. You send it to the editor and he sees nothing in it. It is just an ordinary road. It is not the editor's schoolhouse. But the schoolhouse could be made interesting. You could have told a schoolhouse story that would have brought tears to the eyes of the editor,



ENJOYMENT.

hardened old scamp as he is. You have failed, because you have omitted the human interest. If Mr. Frees had sent us photographs of two of his kittens lying asleep in the sun or sitting on the doorstep, they would have been promptly returned, but he has put art and thought in them; he has added the human touch. It is nurse and patient. It is human experience in a picture. It is well done. In some respects it has never been equalled. The actors are no longer kittens. They embody the ideals of humanity. We do not tire of studying that photograph; we go to it again and again. Not because it is a clear picture of two cats, but because it stands for something that is universal in the human mind. It contains the human touch that vivifies it for us all. We see the schoolmaster and the pupils, the gardener and his assistants, the fisherman, and we feel the spring in the air as the farmer's wife brings the eggs from the chicken house. We do not think of these as abnormal cats and dogs but as normal human beings. What is the secret charm of most paintings? It is not in the canvas nor the paint nor the technique employed in placing the paint on the canvas. It is the skill of the artist, not because the beholder sees the artist himself, his happiness, ambitions, sorrows or joys; it would be of no avail if the artist depicted merely himself; then the painting might be appropriate for his private room; but when he portrays all humanity, then the picture merits a place in a great gallery to be viewed by admiring visitors who will return again and again, because the artist has portrayed not himself but every beholder.

Camerists, put yourselves in the other fellow's place and seriously ask, when you contemplate the taking of a photograph, and stop again and consider when you are sending it to a magazine, "Is the interest in this limited to myself or will it inspire and benefit others?" If it is for the interest only of yourself and your family, hang it in a conspicuous place in your home. If it portrays humanity, send it where a large part of humanity may see it, admire it and be benefited by your service to them.

For a time these cats and dogs were Mr. Frees's. They are not so now. They belong to all us "humans." What Mr. Frees has done with his pets may, to a certain extent, be done with everything, provided the artist knows how to appeal to the majority. If he is general and human, well. If he is individual and local, it may be well with him; it will not be so with anybody else.

## Snake Choked to Death.

Sidney, Ohio.

To the Editor:—

The accompanying photograph is of a large black snake choked to death by a sunfish at Lake Ridge, a pleasure resort on Indian Lake, Ohio, and a noted fishing ground for sportsmen from the middle west.

A fisherman had hung his stringer over the dock, while he went to dinner.



THE SNAKE CHOKED TO DEATH.

Meanwhile the snake seized the largest fish on the string, and attempted to swallow it tail first. The snake's throat was so distended and so badly pierced by the sharp fins, that the serpent was unable to extricate itself and died.

JAMES W. STUBER.

The newest computation for the speed of migrating birds gives from twenty miles an hour for wagtails up to ninety for swallows and martins.

# RECREATIONS WITH THE MICROSCOPE

**Edited by Dr. V. A. Latham, 1644 Morse Avenue, Rogers Park, Chicago, Illinois.**

### Recreations with the Microscope.

The microscope has been brought to perfection. Styles vary a little from year to year, but in the main it will never be essentially improved because there is no room for improvement. It is all that can be desired. It is of unalloyed usefulness and delight.

It is this especially secondary phase that THE GUIDE TO NATURE proposes to emphasize and to make effective in the new department, "Recreations with the Microscope." Dr. Latham, the department editor, is skilled and enthusiastic. The utility phases of the microscope are known in thousands of schools and laboratories. The perfect instruments are used with skill. Now let all these workers unite in showing especially to the younger generation the recreations with the microscope.

The microscope is now as never before a "magic tube." More and more, so long as there are eyes to see, minds to think and hearts to feel, will there be enjoyment in the very smallest as well as in other aspects of nature.—B.

### A Faithful Microscopist.

It is with especial interest that we call attention to Mr. C. L. Peticolas's advertisement in which he offers his entire outfit in microscopy. Mr. Peticolas is eighty-six years of age. He has done more than any one else in this country to inspire an interest in some of nature's most beautiful, yet quite commonly unknown objects—the wonderful microscopic diatoms. To a large number of our readers, the word "diatom" may be meaningless.

Twenty years ago Mr. Peticolas inserted an advertisement in a journal edited by the editor of this magazine and it brought liberal cash returns, for many persons were then interested in diatoms. But diatoms are not things of the past. Beautiful fossil forms exist in abundance and in almost every pool, especially in the spring, myriads of these beautiful microscopic plants live and thrive.

If schools and nature lovers desire to secure beautifully mounted slides of these beautiful objects, here is a good opportunity and at the same time to assist this aged and deserving microscopist.—B.

### Double and Single Staining Solutions for Living Infusoria.

Living infusoria may be stained in very weak solutions of dahlia for the protoplasm (violet) and the nucleus (green) with malachite green if used simultaneously. Any other tar colors can be used if in 1:500,000 strength solution. Anilin black Certes says gives a dark ground effect and they live a long time in the solution.

### To Harden Flies to Give the Best Results in Making Sections.

Use Henning's solution consisting of

Nitric acid (C. P.) 16 parts.

Chromic acid (.5% sol.) 16 parts.

Bichloride of mercury (saturated in 60% alcohol) 24 parts.

Picric acid (saturated watery solution) 12 parts.

Absolute alcohol 42 parts.

When hardened wash out the above solution with iodized alcohol (iodine added to alcohol till sherry color). This fixes and softens chitin. Be careful to embed only a **short** time and against handling the solution with steel or hands. (Excerpt).

La Nature and the Revue Scientifique, which suspended publication in August when their editors went to the front, have resumed.

### Narcotizing Agent for Pond Life and Biological Work.

Make a two per cent. solution in the water they are living in. If it is not desired to kill, the animals may be put into some fresh water, after being studied, and they recover and are not harmed. This makes them easy to keep still whilst taking their pictures or projecting them on the screen in their natural conditions or surroundings.

Monobromate of camphor for narcotization is good for diverse fresh-water forms and is highly convenient. Simply place a few crystals in the water in which they are contained in a watch glass. It is not applicable for marine organisms as salt water hinders its solubility. (Brocher).

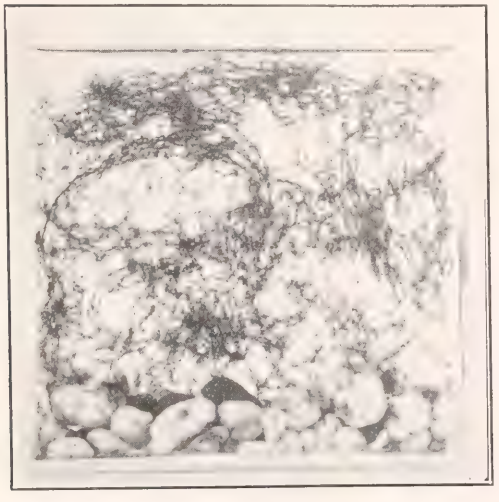
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### Everybody May Have Nitella.

BY EDWARD F. BIGELOW.

The hall was filled with people gazing into a hundred and fifty microscopes. It was the annual microscopical exhibition in Brooklyn. I had been too busy in setting up and adjusting my microscope, so busy I had had barely time to "How d'ye do" to one or two neighbors that were equally busy in screwing on objectives or adjusting mirrors.

At last the nucleus of a fine mounted cell of Spirogyra was in perfect light and focus. As I turned to look around I saw a band of excited people crowding around one microscope. I hastened over to see who had fainted.



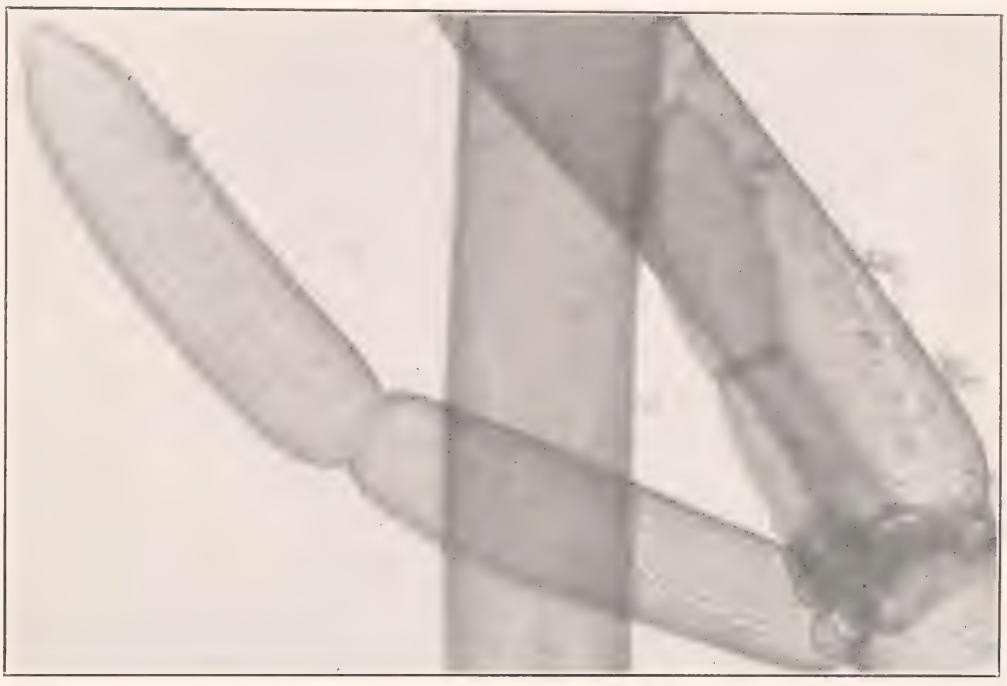
NITELLA IN A SMALL AQUARIUM.

The first words heard on the outskirts of the crowd were, "Come here; we must see this. They say it is a living plant that shows how the life moves." I surmised Nitella, and I envied the microscopist his popularity. I waited patiently till my turn came to look. Only once before and long ago had I ever seen that slow, grand, mysterious procession of the floating particles. How I envied the exhibitor; everybody was exclaiming, "You must see this." "They say it is only a live plant, but it moves." "Isn't that wonderful?"

The only calm and serene person was the exhibitor. He hardly took his eyes from the beloved instrument for fear of its getting knocked off the table by the pushing crowd. His face had an air of serenity as if to say, "Such popularity is only commonplace with me." How benignant and kindly he was as he unfolded his arms and condescended to smile as I heartily congratulated (but inwardly envied him his popularity.) He hesitated, started to say something, then changed his mind as he reached forward to caution an observer. The better angel returned. He condescendingly pulled me by the coat, and hoarsely whispered, "I'll give you a tip on this. Only one place in New York where you can get Nitella. Old man Breutsche, a typical fat German, up at ———'s bird store always keeps a little on hand, but," lowering his voice and suspiciously glancing around, "he is as choice of it as if it were gold dust; awfully hard to grow. He let me have what is there—only a little bit."

I dreamed of that German that night, and in fancy saw him weighing out a tiny bit in old-fashioned scales.

That was three years ago. Nitella is now in the laboratory in abundance. The secret is to put a small amount in a large aquarium in a shady place, cover with glass, do not change the water, do not put in fish nor any other form of swimming life. Anyone may have Nitella in abundance, but it took a year and many failures to teach me that a shady place and no disturbance to the water are needed. It is very fragile. Fish or newts break it up. In much light, confervae and algae overrun everything, and house cleaning de-



THE CELLS WITHIN WHICH IS THE MYSTERIOUS FLOW OF PROTOPLASM.

stroys Nitella. Here is a case where neglect or "watchful waiting" is best. Sometimes I have my doubts as to the value of the "watching." It is a shy plant, and one of the most marvelous ever shown under a microscope.

I wonder why the books do not say more about it. And when they do tell of "cyclosis of protoplasm," how inadequate are those words, as one watches and watches that mysterious, almost uncanny around and around, and around—and the pointer of the clock says half-past eleven. How reluctantly the bell glass goes over that microscope!

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### Interesting But Not True.

No matter how hard the scientist tries to disseminate accurate information, he finds some irresponsible just ahead of him with a story of plants or animals so wonderful that a public, educated via the moving picture route, much prefer it to any sober statement of fact. It is easy for the reporter on the hunt for a "human interest" story to contort the facts until they have little semblance to the truth in his efforts to entertain the public. The advertiser of a set of natural history books that are at present being introduced to the public asks in one of his circulars, "Do you know that the dew plant kills and eats every fly that alights on its petals by ensnaring with a sticky substance?" We confess that this is news to us. We have seen the sun-dew but never one that caught flies with its petals. In another place this same individual informs us that his books will tell us why an ant's head may often be seen walking by itself without a body. Since the ant's legs are attached to its thorax and not to its head we hope we may never encounter this remarkable sight. We know of several people who would never seek for the explanation of such a phenomenon in a book. It would be the Keeley Cure for theirs. Much as we value knowledge, we incline to agree with Josh Billings that "It is a good deal better to know less, than to know so much that ain't so."—"The American Botanist."

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One gets an idea of the enormous number of different sorts of rust fungi from the fact that of the twenty-two genera found in the British Isles, the genus Puccinia alone contains 1300 known species.

# THE AGASSIZ ASSOCIATION

Established 1875 Incorporated, Massachusetts, 1892 Incorporated, Connecticut, 1910

## After Two Years' Experience.

Louisville, Kentucky,
February 1, 1915.

My dear Mr. Bigelow:—

The Agassiz Association has taken a strong hold upon our school and I hope and indeed I believe that it will become a permanent institution. The science teachers value it as an aid to enthusiasm in field work; the English teachers find it an active agent in quickening perception and appreciation of nature allusions of poets and essayists. All teachers find it a potent factor in drawing girls and teachers closer together in a common love and a common work. I am sincerely glad that The Agassiz Association has come among us.

Very truly yours,
O. L. Reid, Principal.

## Our Monsarrat Chapter of Louisville, Kentucky.

The Monsarrat Chapter of The Agassiz Association has received the Charter certifying that we have been recognized as a Chapter of this splendid Association. Already a vote has been passed saying that the Charter shall be framed and hung in our schoolroom where, during difficult lessons, we shall gaze upon it, and perhaps it may soothe our feelings. We will also be reminded of the many wonders God has created and that we shall now be able to study them.

Each one of us sincerely hopes to accomplish a great deal and thus enlighten our minds with knowledge of the beautiful Nature of which we know so little. We have gained some information concerning other Chapters already organized and we shall endeavor to be able to



THE GIRLS' HIGH SCHOOL, THE HOME OF OUR FIRST LOUISVILLE, KENTUCKY CHAPTER.
The Principal, Mr. Reid, says the AA has drawn all girls and teachers closer together in a common love and work.



George C. White, President; Richard Peter, Vice-President; Katherine Schachner, Secretary.



Letitia Lawrence, Corresponding Secretary; Thurman Gast, Treasurer; Walton Small, Sergeant-at-Arms.



President's Committee. Library Committee. Programme Committee.

OFFICERS AND COMMITTEES OF THE MONSARRAT CHAPTER, OUR FOURTH IN LOUISVILLE, KENTUCKY.

send a favorable account of our works later on.

Our regular meetings will be held twice a month; but during that time we expect to have made several trips to the parks and country and to have gathered specimens which will enable us to have very interesting discussions at our meetings.

Our work for this spring is the study of trees, flowers, birds, insects and stones. Each member is to have a sort of scrap book in which to keep clippings, pictures and written information concerning the above topics.

Several books have been donated to us. We would like very much to have a circulating library of which our Library Committee will take charge.

Since each and every member wishes to be faithful to our Chapter and have it a success, we shall strive to do what is required of us and have our standard as high as any of the other Chapters.

LETITIA LAWRENCE,
*Corresponding Secretary.*

This is a good report, a good determination and a good outlook. You have at the very beginning caught the real AA spirit of standing for high ideals and accomplishing things really worth while.—E. F. B.

### Two Naturalist Presidents.

Everybody knows that Mr. Roosevelt takes an active interest in natural history as a scientific pursuit. A statement was recently made by President Osborn of the American Museum of Natural History that he is the first president to take such interest. The fact was commented on by the editor of "The Outlook."

Mr. Frederick J. Shepard, of Buffalo, New York, writes as follows to "The Outlook," calling attention to the fact that President Jefferson was also a naturalist:

"Both you and Mr. Osborn seem to have forgotten that William Cullen Bryant in his youthful poem 'The Embargo' derided President Jefferson for that very thing. He wrote:

'Go wretch, resign the Presidential chair,
Disclose thy secret measures, foul or fair,
Go search with curious eyes for horrid frogs
'Mid the wild wastes of Louisianian bogs;
Or where the Ohio rolls his turpid stream,
Dig for huge bones, thy glory and thy theme.'"



TAKING OFF "THE CAP."



READY TO BURST.

### Astonishing Flowers of the Royal Palm.

Mr. George Lauder, Jr., of Greenwich, Connecticut, recently visiting in Bermuda, was able to obtain some remarkable photographs of the opening of the astonishing flowers of the royal palm. The first picture shows the bud; in the second the man is cutting away the outside shell and in the last is a fountain-like bursting flower. Mr. Lauder further writes as follows:

"These pods grow on the royal palm, *Roystonea Regia*, just above the bark line and of course naturally open of themselves. The pod shown in the photographs was one of rather extraordinarily large size and was opened by Mr. Clavelle, the horticulturist of the Hotel Colonial at Nassau."



THE ROYAL PALM BURSTS INTO FLOWER.

### A Train Attacked by a Deer.

Winter Park, Florida.

To the Editor:—

During a recent trip of a train over the branch of the Florida East Coast Railroad between Titusville and Sanford, in South Florida, a singular exhibition of animal pugnacity, or of an attempt at self-destruction occurred, as reported by Professor Lenhart of the Rollins College Business department.

In a wooded area through which the railroad passes, the train started up two large deer, a buck and a doe. They halted and stood at attention for a moment, apparently undecided what to do. The doe solved the problem by turning suddenly and running into the woods; but the buck, eyeing the train for a few moments, suddenly charged it with great impetuosity, striking one of the cars near the middle. By the violence of the impact, the deer's neck was broken, and the animal thrown back about twenty feet from the track. The train was stopped and the dead animal loaded into the baggage car to supply the lucky train men's tables with venison. Was this an instance of animal bravado, or fright or of an attempt to safeguard his fleeing mate; or was it deliberate suicide?

THOMAS R. BAKER.

On a recent trip from Salamanca, in the southwestern part of New York State, to Dubois, Pennsylvania, the conductor told me that the train two days previously struck a black bear that stood its ground on the track. And curiously enough on the return trip the train struck another bear at almost the same place. Both found the locomotive a formidable adversary, but the train men said that bear meat is delicious, and exhibit the skins with much satisfaction.—E. F. B.

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Write while the heat is in you. When the farmer burns a hole in his yoke, he carries the iron quickly from the fire to the wood, for every moment it is less effectual to penetrate it. The writer who postpones the recording of his thoughts uses an iron which has cooled to burn a hole with. He cannot inflame the minds of his audience.—Thoreau.

### Rock Toadstools.

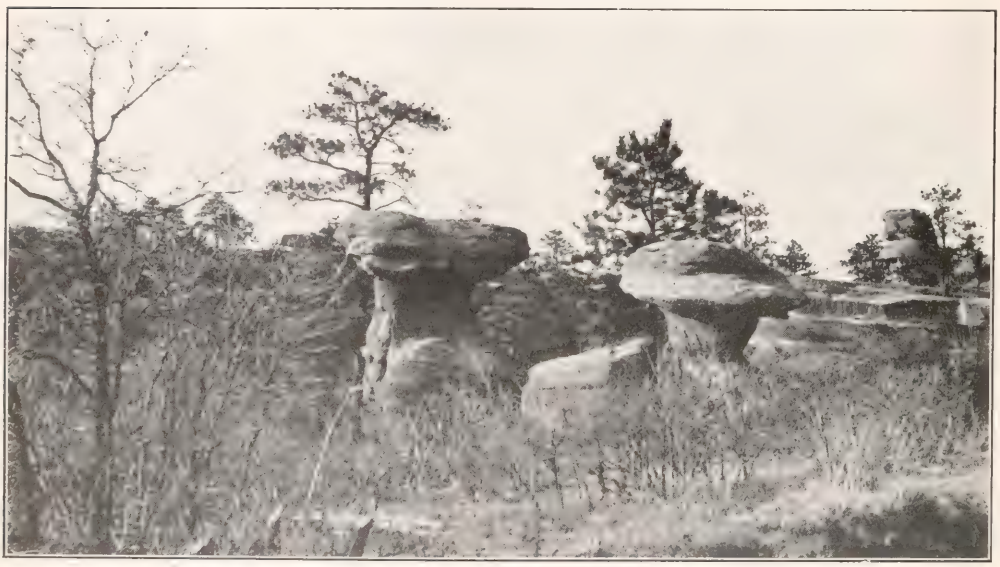
Manitou, Colorado.

To the Editor:—

I enclose a photograph that I hope you will find available for publication. These are natural formations of red sandstone, located in Mushroom Park, on the land owned by Paul Goerke & Son of Manitou, Colorado. They are called "The Toad and Toadstools" on account of their resemblance to a toad sitting under a toadstool. Near these can be found many wonderful formations resembling mushrooms, from which the park gets its name.

Yours truly,

CHAS. S. BARNETT.



THE ROCKS IN FORM SUGGEST TOADSTOOLS.

### Snakes and Snow.

BY CHARLES D. ROMIG, AUDENRIED, PENNSYLVANIA.

Occasionally during the snowy season, we read a newspaper statement that some one has seen a snake or several snakes lying in the snow after a sort of premature visit to the outside world. Fortunately we are not compelled to believe all we hear, and in both winter and summer snake stories are quite flexible.

In regard to the foregoing I wish to describe what a friend and I actually saw on Sunday, March 14th of this year. We were strolling about the edge of a swamp, and were wearing gloves, overshoes and winter clothes because the temperature was nearly at the freezing point and the wind was strong and raw. An abundance of snow remained from a snowstorm of two weeks previous.

Suddenly I spied a small brown snake about eighteen inches long, coiled on a spot that was surrounded by snow and water. It darted out its tongue, and when we touched it with a cane, it straightened out and crawled away under leaves and water. This was a remarkable performance, although the snake did not crawl through the snow as some might say.

### Heating Value of Woods.

All non-resinous woods, says *Science,* have virtually the same heating value, weight for weight, about 2100 calories to the pound. But resin is more than twice as heating as cellulose, 4270 calories to the pound. Therefore, all dry wood, reckoned by weight, has a fuel value in proportion to the amount of rosin in it.

Bought by the cord, however, the heavy woods like hickory and oak are worth more than the resinous ones.

Hard coal has a heating capacity of 3500 calories to the pound, nearly twice that of non-resinous wood. In general, therefore, to equal a ton of coal, requires a cord of hickory, oak, beech, birch, hard maple, ash, elm, locust, long-leaf pine or cherry; a cord and a half of short-leaf pine, hemlock, fir, sycamore, soft maple, or gum; and two cords of cedar, redwood, poplar, cypress, basswood, spruce or soft pine.

## Necrology

Dean Charles Edwin Bessey died at his home in Lincoln, Nebraska, Thursday, February 25th. The news of his death reached this office too late to be mentioned in our April number. Dr. Bessey was indeed a "doctor," for he was a teacher in every sense of the word. He was also a thorough and thoroughly technical scientist. He was one of the rare men of great learning with a special sympathy for those who do not know. It is said by those that came in special touch with him in college that he was particularly fond of the freshmen. He declared that work with them is far more important than in any other department of college instruction, because in the freshman year are acquired incentives, enthusiasm and habits of study. Dr. Bessey was a learned botanist, and the author of many books and pamphlets on the subject. He was a prominent member of various scientific societies, and the first member to enroll in The Agassiz Association under the present management, and constantly manifested an interest and a desire to cooperate in our work. He never became a "has been." Up to the time of his last illness he worked with all the enthusiasm and charming result that we naturally expect from those that early began to explore the realms of nature. He was constantly a beginner in some new work, or in new endeavors to inspire others with a love of nature. He was a contributor to THE GUIDE TO NATURE and a constant adviser and cooperator with its manager. No question was too simple for him to answer and none too difficult. Upon all he brought to bear a scholarship that was profound and a love that was enthusiastic and unbounded.

Special tribute was paid to him in the House of Representatives in his state not only because of his prominence and influence in the State University, but on account of his remarkable enthusiasm. Says one speaker:

"Wonderful was the relationship that sprang between him and the freshmen from the town or the farm or the sand hills country. As he unfolded to them the mysteries of plant life, they saw that they had been in a world of wonder and a world of beauty which they had never appreciated before. The once aimless, thoughtless students felt the thrill. They saw the magnificent work of the Creator and felt the spell of nature and of one greater than nature. During the first year in the university many would decide to specialize in botany. With Doctor Bessey as their counselor and friend many would go on with their work for love of the subject during vacation times. The sand hills country attracted some of them. The great plains attracted others. The mountains of Colorado attracted others; no summer passed without Doctor Bessey's students studying plant life in some near or remote sections endeavoring to penetrate the mysteries of nature in the spirit of their teacher."

Of his untiring labors another spoke as follows:

"Yet he did not acquire his fame solely on account of his innate ability. Patient industry explains much of his success. He would go to his laboratory early in the morning and until recent years on account of wretched and inadequate quarters would repeat his inspiring lectures to three successive classes of freshmen, since there was no class room large enough to hold them all. Some of you have talked. I am told, nearly three hours in the legislature and found it a fearful strain. Try to talk three hours in succession to freshmen day in and day out and you will find the strain still greater. After this labor he would work with his advanced students and finally long into the night he would be studying some problem along the line of higher scholarship. Thus his hours and days were filled; happy, useful, contented; teaching much, investigating much; and yet he found time for other things.

The editor of this magazine was fortunate in having an acquaintance with him both personal and by correspondence that extended over almost a quarter of a century and from him received always cordial friendship and encouragement. He aided The Agassiz Association by his pen, his pocketbook and his kindly counsels. We sincerely mourn his loss. It is a loss to every student and lover of nature.




PATH FLOWER AND OTHER VERSES. By Olive T. Dargan. New York City: Charles Scribner's Sons.

This is a dainty little book comprising for the greater part only nature poems. There are delicate verses addressed to a little tree, to a hermit thrush and to the "Path Flower," probably the best from the nature point of view, and from which the book takes its name.

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THE BRITISH JOURNAL PHOTOGRAPHIC ALMANAC 1915. 57 East Ninth Street, New York City; George Murphy, Inc., General Sales Agents. Paper cover, 50c; cloth, $1.00; postage extra according to Zones.

This annual photographic almanac is devoted mostly to advertisements, and these are perhaps not less interesting than the text. An attractive article on photography with the microscope contains several small but pleasing photomicrographs.

THE CURIOUS LORE OF PRECIOUS STONES. By George Frederick Kunz, A. M., Ph. D., D. Sc., Philadelphia, Pennsylvania: J. B. Lippincott Company.

This is a beautiful book by an authority on the subject. It is beautiful mechanically, attractive in illustration and clearly expressed. The following quotation from the preface will interest our readers:

"The love of precious stones is deeply implanted in the human heart, and the cause of this must be sought not only in their coloring and brilliancy but also in their durability. All the fair colors of flowers and foliage, and even the blue of the sky and the glory of the sunset clouds, only last for a short time, and are subject to continual change, but the sheen and coloration of precious stones are the same to-day as they were thousands of years ago and will be for thousands of years to come. In a world of change, this permanence has a charm of its own that was early appreciated.

"The object of this book is to indicate and illustrate the various ways in which precious stones have been used at different times and among different peoples, and more especially to explain some of the curious ideas and fancies that have gathered around them. Many of these ideas may seem strange enough to us now, and yet when we analyze them we find that they have their roots either in some intrinsic quality of the stones or else in an instinctive appreciation of their symbolical significance. Through manifold transformations this symbolism has persisted to the present day."



"MAIDA" ADOPTED A FAMILY OF RATS.

THE GREAT SMALL CAT AND OTHERS. By May E. Southworth. San Francisco, California: Paul Elder & Company.

Interest in this book will not be limited to those that specially love cats. The personal treatment and the daintiness and delicacy of the entire essay will appeal to any lover of nature. Mrs. Southworth possesses literary ability; to it has been added the cooperation of a skilled publishing house. The book is an artistic gem of unusual form. Probably the best chapter is "Maida," a cat that adopted a family of white rats, as a substitute for her lost kittens.

GAME BIRDS, WILD-FOWL AND SHORE BIRDS OF MASSACHUSETTS AND ADJACENT STATES. By Edward Howe Forbush. Massachusetts State Board of Agriculture.

This book includes those birds which have been used for food but have disappeared since the settlement of the country, and those which are now hunted for food or for sport, with observations on their former abundance and recent decrease in numbers; also the means for conserving those still in existence. The book is freely illustrated and the mechanical make-up is good.

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MANUAL OF FRUIT INSECTS. By the late Mark Vernon Slingerland and Cyrus Richard Crosby. New York City: The Macmillan Company.

This book is a full and practical account of the insects which attack fruits—the enemies of the apple, pear, peach, plum, bush fruits, grapes, strawberries and cranberries. The authors give the life history of each insect, describe the injuries which it inflicts and make recommendations as to the means of control, primarily from the standpoint of the commercial grower. The more than four hundred illustrations in the volume were made largely from photographs taken by Professor Slingerland.

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THE PRINCIPLES OF FRUIT GROWING. By L. H. Bailey. New York City: The Macmillan Company.

Revised and rewritten throughout, the present edition of this book (the twentieth) embodies the latest information on fruit-growing, including accounts of the most recent practices and discoveries. The different kinds of fruits, the heating of orchards to protect them from frost, the treatment of diseases and insects, the planning and laying out of orchards, and the important topic of fertilizers, are all adequately discussed. The illustrations are new and were made from hand drawings specially executed for this issue.

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MANIPULATION OF THE MICROSCOPE. By Edward Bausch, Rochester, New York: The Bausch & Lomb Optical Company.

Many inquiries personally and otherwise come to this office regarding the best method of using the microscope. "Microscopical Praxis," published by the editor of the magazine several years ago, and written by Dr. Alfred C. Stokes, is undoubtedly the best thing published on the subject in the days of amateur microscopy. But that book has long been out of print, though many requests for it still continue to come. The book by Edward Bausch gives full credit in the preface to "Microscopical Praxis" and also to Professor S. H. Gage's "The Microscope and Microscopical Methods." For a book that is not too extensive, this by Edward Bausch is the best now obtainable; for something more elaborate one should have Professor Gage's work, published by The Comstock Publishing Company, Ithaca, New York. These two books give the ideal instructions for the manipulation of the microscope.

THE PRACTICAL BOOK OF OUTDOOR ROSE GROWING FOR THE HOME GARDEN. By George C. Thomas, Jr., Philadelphia, Pennsylvania: J. B. Lippincott Company.

The rose is a magnificently beautiful flower: the same phrase rightly characterizes this book. There are eight half-tone plates of roses, and ninety-six full page, perfect reproductions in color. The book is one of the most attractive that have come to the reviewer's desk. The illustrations are unequalled. Although the price is four dollars, the book should have a wide sale. It is a magnificent production—a fitting portrayal of a magnificent flower. To study the colored plates following the body of the book is the next best thing to visiting a rose garden; indeed their beauty excels that of many such gardens.

The author has achieved remarkable success in rose growing. With him the work has been a lifelong hobby. He has tried all known varieties and his labor has made his rose gardens famous.

Mr. Thomas devoted three years toward the making and perfecting of autochrome color photographs from perfect examples of roses. The ninety-six illustrations in color are extraordinary reproductions of these made under his personal direction.

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PLANT BREEDING. By L. H. Bailey. New Edition Revised by Arthur W. Gilbert, Ph. D. New York City: The Macmillan Company.

Professor Bailey's standard text, originally issued some twenty years ago, has been revised and brought down to date by A. W. Gilbert, Professor of Plant Breeding in the New York State College of Agriculture. In addition to the many changes made in the material that has been retained, there are now included in the volume new discussions of mutations, Mendelism, heredity and the recent applications of the breeding of plants. There are also extensive laboratory exercises and a bibliography. Altogether the work is a comprehensive encyclopedia on the subject of plant-breeding.

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Bird-Lore for March-April continues its interesting story of "Bird-Life in Southern Illinois," with a Naturalists' Diary for 1914, covering the vegetation, weather and bird statistics of Larchmound, with interesting pictures of the estate; while a photograph of a half-dozen Canada Geese, high up in the sky, might pass for a picture of a flock of German "Taubes" flying over Belgium.

This issue of Bird-Lore is particularly rich in the number of unique pictures it contains, notably those of the Arizona Road-runner, showing the bird under almost every possible condition. "Facts about Cats" reveals a condition not so well known, and, in the School Department, the pictures of bird-houses made by school-boys in Ohio and Canada, make an interesting feature of one of the most valuable issues of this magazine.

The color plates by Fuertes, particularly that of the Towhee, are very rich in coloring, and add much to the beauty of the magazine.

## Some Ideas Come With a Smash




### Proof Positive.

"How are you to-day, John?" said a landlord to one of his tenants, whom he met on the street.

"Vera weel, sir, vera weel," answered John, in his usual way, "if it wisna for the rheumatism in my right leg."

"Ah, well, John, be thankful; for there is no mistake, you are getting old like the rest of us, and old age does not come alone."

"Auld age, sir," replied John. "I wonder to 'ear ye. Auld age has naething to do wi't. Here's my ither leg jist as auld, and it is quite sound and soople yet."—"The Youth's Companion."

# PUBLISHER'S NOTICES

'Tis not in mortals to COMMAND success, but we'll do more, Sempronius, we'll DESERVE IT.
—Addison: Cato.

## Punktal Lenses.

These new lenses mark an important epoch in the history of ophthalmic optics. They are strictly analogous to the photographic anastigmat, since they render in their field the same service that is performed by the latter in the field of photography. They remove a handicap under which the oculist and the refractionist have been compelled to labor for years, by enabling them to prescribe for their patients lenses equally well corrected from the center to the very margin.

The word "Punktal" is of German origin, meaning in this application a lens which reproduces any given definite point of an object as a distinct point in the image. In other words, we have at last obtained an ophthalmic lens which is corrected for astigmatism in all powers. For many years past practically the only improvements in ophthalmic lenses have been in the technique of manufacture.

With the popularization of the Meniscus and Toric lenses, there was introduced a better corrected lens, one in which the angle of distinct view was materially increased. This was brought about largely through the publication of the Ophthalmic Lens Chart by the Bausch & Lomb Optical Company in 1912.

The flat forms of lenses would be satisfactory, if the eye always remained stationary in its socket and used only the center of the lens, but the eye rotates in viewing surrounding objects, and even in reading, and one compelled to wear ordinary lenses can avail himself of this rotation within only restricted limits, according to the form of lens used. As his line of sight moves toward the margin of the lens, both blur and distortion are noticed—very pronounced in the flat forms, less pronounced in the ordinary deep curved types. This blur is caused by the astigmatism of oblique pencils of light.

Desiring to eliminate all this astigmatism and recognizing the impossibility of doing so when using a fixed base curve lens for all foci, Dr. Moritz von Rohr, of the scientific staff of Carl Zeiss, Jena, Germany, instituted extensive investigations in this field, and published his findings in 1911.

Problems of manufacture were then undertaken and have now been solved satisfactorily. The result is the new Punktal lenses. The word has been registered as a trade-mark in the United States by the firm of Carl Zeiss and patents obtained upon the astigmatic corrections, The exclusive manufacturing rights for the American continent are held by the Bausch & Lomb Optical Company, American associates of Carl Zeiss and among the instigators in the development of this new type.

The Punktal lens, by eliminating all astigmatism, enables the wearer to see objects distinctly within an angle of view of about sixty degrees. The observer is thus enabled to see through the extreme margin of the lens as clearly as through the center.

Punktal lenses represent what may safely be regarded as the highest possible achievement in ophthalmic optics. They are the products of precise workmanship, and a guarantee of the accuracy of their curves and surfaces is assured. Each lens bears upon its surface, near the margin, a small trademark of the Bausch & Lomb Optical Company, which is not easily distinguishable with the naked eye, but which serves as a mark of identity upon this product. We take real pleasure in thus calling attention to the new lenses. The Bausch & Lomb Optical Company is always so kind, so courteous and so

accommodating at all times, and to all its customers, that dealing with the Company, or even asking for optical information, is always a satisfaction. The Company is never too busy to help even the tyro. It actually seems to take pleasure in doing so.

### Describing What has been Seen.

Ruskin says that it is a rare gift to be able to see and to describe, but in these talents and their development is the great value of nature observations, especially in the schoolroom, even with young children. Words correctly used and drawings correctly made should be the outcome of every nature observation. Put these expressions on the blackboard, where they may be seen by all in the room. In blackboard writing and drawing the best crayons made in the United States are those made by the Binney & Smith Company, 81-83 Fulton Street, New York City. Write them and get full particulars. Their crayons are first-class and moderate in price.

### A Good Photographic Magazine.

We cordially recommend to our readers "Camera Craft," published at San Francisco and edited by that enthusiastic expert, Fayette J. Clute. He seems intuitively to know what nature photographers need. The magazine is practical and informative rather than abstract or theoretical.

### For Photographers.

Burke & James, Inc., of Chicago, have placed on the market a new rapid, guaranteed developing paper of the highest quality, known as Rexo. Interested photographers can obtain a sample of this paper by sending their names and addresses to the above company and mentioning the fact that they saw this notice in THE GUIDE TO NATURE.

### Prizes Won by Fox Terriers.

Spratt's Trophy, value fifty dollars, for the best brace in 1914 shows was won by Mr. G. W. Quintard's Ridgeway Kennels with the following fox terrier braces:

Ch. Matford Vic---Ridgeway Corker
Ch. Raby Dazzler---Cromwell Cheeky

### Hardy English Walnut Trees.

New Milford Conn.

To the Editor:

A few years ago my father found a hardy English Walnut tree which had been transplanted from Northern Europe. This tree was bearing nuts of exceptional flavor and fullness of meat; in fact, better than any he had ever seen. He procured some of the nuts to plant on his farm near Lockport, New York, but the children found them and ate all but seven. These seven all grew and in a few years the young trees began to bear nuts fully as good as the originals.

Father was very proud of his seven trees which were fast proving to be the most valuable on his farm, one having produced sixty dollars worth of nuts in a single year. They were also the handsomest trees in the county, being tall and shapely with a dense dark green foliage and white bark.

Horticulturists came from all parts of the country to see the trees, as it has not been considered possible to grow them successfully in the North. They found them very hardy and the nuts the best they had ever eaten. They were so delighted that they asked father to raise them some trees from his old ones, realizing that these would be thoroughly acclimated. The requests were so persistent that father did so, the result being that these trees are now widely distributed in all the Northern and most of the Southern and Atlantic States. They have proven to be perfectly hardy.

We will have a few of these young trees ready for spring planting. I have written, thinking your readers would be interested in having some for their home grounds or farms.

Yours respectfully,
E. C. POMEROY.

### A Great Educational Magazine.

I read THE GUIDE TO NATURE regularly every month. It is a great educational magazine of practical natural science. Its contents are of immense value to all that take any, even the least, interest in the affairs of nature. Its illustrations are superb. I wish you continued success in the coming year.—R. Menger, M. D., San Antonio, Texas.

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